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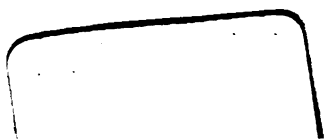




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PRACTICAL TREATISE
ON
PARTURITION,

COMPRISING THE
ATTENDANT CIRCUMSTANCES AND DISEASES OF THE
PREGNANT AND PUERPERAL STATES.

BY SAMUEL ASHWELL,
MEMBER OF THE ROYAL COLLEGE OF SURGEONS, AND OF THE MEDICO-
CHIRURGICAL SOCIETY OF LONDON.

TO WHICH ARE APPENDED,
TWO PAPERS,
THE ONE CONTAINING SOME REMARKS ON ABDOMINAL SURGERY,
THE OTHER ON TRANSFUSION;
PRESENTED BY DR. BLUNDELL,
OF GUY'S HOSPITAL.

SEQUERE NATURAM.

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ERRATA.

Page	41, for <i>systems</i> , read <i>symptoms</i> .
	152, for <i>Chap. II.</i> read <i>Chap. III.</i>
	309, for <i>child</i> , read <i>chin</i> .
	384, for <i>present</i> , read <i>prevent</i> .

TO
JAMES BLUNDELL, M.D.

LECTURER ON PHYSIOLOGY AND MIDWIFERY AT GUY'S
HOSPITAL.

MY DEAR SIR,

THERE is no one whose name I can with so much pleasure and propriety prefix to the following pages as yours. To the valuable and justly celebrated instructions of your uncle, Dr. HAIGHTON, I am indebted for the first principles of obstetric science; and to your own liberality, and the extensive opportunities which since that period your class has afforded me, I owe a knowledge of many of the real difficulties of parturition. Were these circumstances in

B

themselves insufficient, your zeal and distinguished talent in the revival of the operation of transfusion in an improved form, and your successful labours in abdominal surgery, would especially point you out as the individual to whom a practical work on Midwifery should be dedicated.

I am, my dear Sir,

With every feeling of personal friendship,

Yours truly,

SAMUEL ASHWELL.

Lime Street Square, Sept. 1828.

INTRODUCTION.

IT is not my intention to trespass on the patience of my readers by a long explanation of the causes which gave rise to this treatise. It is sufficient perhaps to observe, that having been employed for some time in the collection and arrangement of materials, and having been requested to furnish the article on Midwifery for the London Encyclopædia, I felt persuaded, as I proceeded in the task, that a work on the plan of the present, might be rendered generally acceptable to the profession.

My design has been to steer a middle course, between the large and comprehensive

systems of Baudelcoque, Denman, and Burns, and the mere outlines and manuals upon the obstetric art. Thus, while the voluminous details of the former works are avoided, practical utility is not sacrificed to the concise brevity necessary to the latter class of publications. It is intended to present, in a compendious form, to the students in Midwifery as well as to those actually engaged in its practice, much that will really avail them at the bed-side of the patient. And while it is readily allowed, that the study of first principles can alone constitute the basis of good practice, it is by the application of these principles to the management of all the varieties of labour, that this work will be principally distinguished.

If an apology be required for the intrusion of a new book, it will be found in the increasing attention bestowed on obstetric science, and in the simplicity and certainty of its now established precepts; creating a necessity for some work, which, while it re-

tains the useful results of ancient research, shall simplify and improve them by an association with the more certain and correct practice of modern times.

I am also persuaded that the unmerited disfavour in which this department of the practice of physic has been so long held by some ranks in the profession, must eventually yield to the great and important benefits it confers upon mankind. Nor can I perceive that there is less skill, courage, or judgment required to conduct a patient safely through the dangerous processes of a difficult, preternatural, or flooding labour, than in the performance of a surgical operation, or the treatment of an internal disease. I can scarcely conceive a situation in which a greater demand is made on the mental resources of the practitioner, than in cases where two lives are dependent on his unaided exertions; or where his most prompt and momentary efforts are called forth to extricate a patient from the alarming conse-

quences of a large and unexpected hæmorrhage. . Neither is it less difficult to determine the precise period when a protracted labour, involving the life both of the mother and the child, can no longer be safely trusted to the natural powers. I feel confident that none who have witnessed these circumstances, and they alone are capacitated to express an opinion, will underrate either the talent or the high respectability of a department of the profession which can enumerate amongst its members, in former times such men as Harvey and Smellie, and at a later period Hunter, Denman, and Haighton.

I am greatly indebted to the many valuable publications now in existence on this subject, nor is it to any want of high appreciation of these established productions, that this treatise is to be attributed; but to the desire I have long entertained to combine, in a condensed and yet efficient form, the principles, but more especially the practice, of the obste-

tric art. It is not to be expected in so advanced a stage of this branch of professional knowledge, that many new opinions will be brought forward; a revision, and in some instances, perhaps, a clearer and more natural exposition of facts and modes of procedure already known, falls more within my design; and I am particularly anxious not to incur even an apparent liability to the imputation of appropriating, without acknowledgment, the labours of other men.

To many of my professional friends I am deeply indebted. To Dr. BLUNDELL, not only for many valuable suggestions, and for the uncontrolled use of his extensive museum, but for the substance of the two interesting papers at the end of the volume.

To Dr. MARSHALL HALL, for the communication of some most important facts, and for the careful examination of that part of the work which treats of puerperal diseases.

To Dr. E. J. HOPKINS and to Dr. FRANCIS RAMSBOTHAM, as well as to many others of my professional brethren, my acknowledgments are not less due for the valuable assistance they have afforded me.

HISTORY OF MIDWIFERY.

MIDWIFERY, in the present and extended import of the term, includes not only the assistance directly afforded to women in the act of child-birth, but the relief of the diseases connected with their sexual system, as well as those of their infants during the period of lactation.

We shall endeavour to present to our readers a brief, yet a connected sketch, of this branch of medical science; dwelling very slightly on the early periods of its history, when the notions of the ancients were so erroneous, and their practices so absurd, as scarcely to reward the trouble of investigation. The practice of midwifery, or rather the be-

stowment of help on parturient women, was almost co-existent with the human species. 'There must have been a time,' says Dr. Denman, 'when the rude but well-meant endeavours of one friend to relieve another in distress ceased, and application was made to those who were supposed to have more information or greater skill. This would properly be the origin of the art.'

From all the passages of Scripture where midwives are mentioned, it is plain that women were the only practitioners of this art among the Hebrews and Egyptians; and it is equally certain that the Greeks and the Romans confided this most important branch of medicine to women. Rachael, the wife of Jacob, and Thamar, who was delivered of twins, were assisted by midwives. Pharaoh, king of Egypt, commanded the midwives to destroy all the male children of the Hebrew women; but they nobly disobeyed. Phana-rete, the mother of Socrates, was a midwife; and Plato explains the functions, and regulates the duties undertaken by these females. He remarks that at Athens they had the right of proposing and making marriages. Hippocrates, Aristotle, Galen, and Ætius, allude

to midwives in their works; and *Aspasia*, who was probably celebrated amongst the women of this order, is not unfrequently cited by *Ætius*.

These instances are interesting, inasmuch as they prove that a distinct class of females was employed to render assistance in labour. In these early ages every circumstance would favour the health and energies of the species; and where the difficulties of parturition were trivial, not arising from malformation or a debilitated system, a little longer time, and the encouragement of the midwife, associated perhaps with manual help, more apparent than real, would be amply sufficient to overcome every obstacle. In other instances, as we cannot suppose they enjoyed an entire exemption from pelvic deformity and extensive hæmorrhage, more especially at Athens and Rome, where luxury and voluptuous dissipation were widely prevalent, such assistance as the imperfect state of their knowledge on this subject enabled them to bestow, could not have prevented a most painful mortality amongst parturient women. It ought, however, to be remembered, that the warmth of the climate would exert a genial influence and

very much facilitate the progress of labour. To this circumstance we may perhaps fairly attribute a great portion of that success, which to us, at this period, appears to have exceeded any reasonable expectation.

Hippocrates, who practised medicine in Greece 460 years before the Christian era, is styled by some authors the father of midwifery as well as of physic. It is needless to dwell on the unbounded veneration with which his name has been regarded by succeeding ages. His works will ever excite the highest admiration, as carrying with them indubitable proofs of profound and laborious research. His sagacity and experience fully entitle him to our praise; and yet, by only glancing at his obstetric views, we shall afford our readers ample means to estimate the very little progress which the science had then made. To female diseases, not immediately associated with parturition, he evidently paid much attention; there was little or no difficulty in the way of personal observation, and his opinions and method of treatment are to this day, in some measure, the objects of enquiry.

In midwifery, on the contrary, he had no

such opportunities ; his information was not gained at the bed-side of the patient. The precise character of the circumstances to be remedied, and the 'ratio medendi' of the means proposed, came to him through the medium of persons incapable of forming a correct opinion, and of making a just report. It is not wonderful, therefore, that we now smile at his notions, and hold in little estimation his uncouth and curious remedies. Hippocrates was acquainted with no other kind of natural labour than that in which the head presents. Here, if the progress was slow and difficult, he recommended sternutatories ; and, if these failed, the patient was to be held by the shoulders, and gently shaken at intervals till her pains expelled the child. He represents presentations of the feet as generally fatal ; and in these, as well as where the arm, leg, or side presents, he recommends to return them as soon as possible into the uterus, and to bring down the head. If from any untoward circumstance, as the death of the child, or the swelling of its body, its delivery cannot be effected, he directs that it shall be brought away piece-meal. His injunctions relative to the management of the

placenta are replete with danger. Its immediate extraction is recommended ; and pulling at the funis, in various ways, is the principal method of procedure. From this period till after the commencement of the Christian era, midwifery made no progress. Celsus, who flourished in the reign of the emperor Tiberius, A.D. 37, although an ardent admirer and a close copyist of Hippocrates, threw some new light on parturition. He recommended, in the case of a dead child, *the introduction of the hand*; and the *delivery by the feet* in cases where the arm presented ; and was of course aware of the error of Hippocrates in attaching such fatal consequences to footling cases. He also recommends the dilatation of the os uteri, from which, however, little benefit and much injury may often arise. This *improved* method of delivery did not meet with all the credit and support which it deserved ; for Galen, who lived A.D. 131, about 600 years after Hippocrates, condemned it as decidedly as his great predecessor had done. Pliny too, who lived under Vespasian and Titus, accords with Galen ; and, although not a physician himself, attests the opinions of the physicians of his time. He asserts the

difficulty attendant on labour where the feet present, denominates it preternatural, and adds, that children coming into the world in this manner were called *agrippa*, that is to say, born with much difficulty. This opposition to delivery by the feet was not easily overcome; for, although men of reputation approved and recommended it, we find that, as late as the middle of the seventeenth century, Riverius publicly condemned *footling* labour; and Mauriceau remarks, in the first edition of his book printed in 1664, that many authors were still of opinion that, in such cases, it would be better to turn, and bring down the head of the child. After having, however, observed that it is difficult, if not impossible, to execute this, he concludes, 'it is much better to extract the child by its feet, when they present, than to run the hazard of doing worse by turning it.' The advantages of this first great improvement in obstetric science are so apparent, and the principle on which it proceeds is so simple,—so superior to the laborious, and in many cases insuperably difficult and dangerous practice of bringing down the head, that we are filled with surprise at the hostility opposed to its adoption. It

is impossible to place in a clearer light, the ignorance and irresponsibility of the writers and practitioners of midwifery at this period they propose almost as a universal remedy a procedure which can rarely be adopted with safety, and the employment of which must have been attended, in the majority of instances, with the most calamitous results. *Turning a child*, by the most *skilful practitioner*, and in the most favourable circumstances, is a truly undesirable occurrence ; we can, therefore, easily conceive its consequences in such a rude and undigested condition of the principles and practice of the art.

It would serve no useful purpose to dwell on the series of writers who succeeded Celsus ; they were, for the most part, devoted followers of Hippocrates ; and, where this was not the case, they were little more than transcribers of each other. Amongst the number may be mentioned Moschion, in the reign of Nero ; Rufus, Ephesius, Galen, in the reign of the emperor Adrian ; Oribasius, and Paulus Ægineta, who closes the list of ancient Greek writers on medicine. Le Clerc, in whose History of Physic much curious and very interesting matter will be found, places Paulus

at the end of the fourth or the beginning of the fifth century ; about which period the western Roman empire had been overturned by the Goths and Vandals. Le Clerc supposes that the celebrity of Alexandria, for centuries the chief seat of philosophy and science, though now past the meridian of its splendour, had induced him to prosecute his studies in that city ; to have done which, according to Ammianus Marcellinus, in the time of the emperor Valens, was a sufficient pretence for any one to commence the practice of physic.

Soon afterwards the library of Alexandria was burned, its scientific treasures were dispersed, and its learned men driven into exile by the ruthless hand of Mahometan intolerance ; thus terminating the splendor of the last of the ancient schools. But the Saracens were happily destined in their turn to carry forward philosophical and intellectual enquiries ; and in Arabia, astronomy, geometry, and medicine, were cultivated with great zeal and no small success. Nor can we forget that to them we are indebted for the use of numerical characters, and that their physicians first presented to the world an account of the small-pox. Yet our notices of the

medical writers of this school must necessarily be brief; although as they devoted themselves in some degree to midwifery, our history would be imperfect were we not to present to our readers some short abstract of their labours.

Serapion treats, at some length, of the diseases of pregnant women, with the method of cure.

Rhazes follows in the same course, and advises the membranes to be ruptured by the nail, or by a small knife, when, by their toughness, they impede the labour.

Avicenna, who lived at Ispahan about the year 1000, possessed amazing celebrity, and his writings maintained their fame till the restoration of learning. It was he who gave the first description of the *forceps*, an instrument to be employed in difficult parturition, with the double purpose of saving the life both of the mother and the child. In all preternatural cases, Avicenna adheres to the erroneous practice of reducing the head to the natural position; but where this is impossible, he enjoins delivery by the feet, and pronounces it the safest of the preternatural presentations.

Albucasis, the last Arabian writer to be mentioned here, lived in the eleventh century at Cyropolis, on the Caspian Sea ; and, according to Dr. Smellie, to whom we are indebted for some valuable facts introduced in this sketch, ' is the same person who was also known by the name of Alsaharavius, at least so it appears from an Arabian manuscript now in the Bodleian library.' Albucasis merely followed his predecessors, annexing a more particular description of the instruments then used in midwifery.

Having thus briefly traced the progress of medical science, so far as midwifery is concerned, from the earliest ages, we must remark, that about this period (the twelfth century) the study of physic began to decline in the east. We have already seen that the destruction of the Alexandrian library, and the dispersion of the learned in different countries was productive of good. By these events, in themselves so disastrous, science was diffused over many parts of the world, which otherwise might have remained in darkness and error. After the conquest of Rome by Odoacer, the eastern part of this vast empire survived for many centuries. Con-

stantinople, its capital, was distinguished not only by its splendour and magnificence, but by its cultivation of the arts. Men, devoted to science, here found an asylum, till its final subjugation by the Turkish arms, under Mahomet the Second. But the religion and manners of the Turks were most unfavourable to literature; they were led to circumscribe all philosophy and knowledge within the narrow limits of their own intolerant and fanatical faith. It is, therefore, naturally to be supposed that individuals devoted to literary pursuits would seek elsewhere the tranquillity which the barbarity of their conquerors denied.

Many of these individuals would doubtless repair to the schools which had been established in Italy since the eighth century, from which western Europe first derived its knowledge; and amongst these, Padua was especially famous for the cultivation of medicine. It must also be remembered that the darkness of the middle ages was now passing away; that the dawn of that day had appeared, which, in its full splendour, was to enlighten the whole of Europe, and to create a period distinguished by historians, as 'the revival of

letters.' The minds of men, too, were arising, perhaps for ever, from the ignorance and degradation in which they had been so long lost ; and the art of printing, now fully established, had removed every serious impediment to the attainment and distribution of human learning. The accumulated stores of the ancients were exposed to observation and enquiry throughout Europe ; and the Greek MSS. preserved after the destruction of Alexandria, and which had been already translated into the Syriac, Persian, and Indian languages, were brought from Constantinople by the learned Greeks, after the taking of that city in the year 1453. The universities of Paris and Montpelier succeeded those of Italy, and continued, till the eighteenth century, to attract not only the students of medicine, but those also who were desirous of improvement in general literature and science.

It is now time to direct the attention of our readers nearer home, and to trace before them the progress which medicine, and more especially midwifery was destined to make in England. It would be very easy to show that our own country has afforded no pleasing exception to that slow and very gradual at-

tainment of knowledge which has marked the early history of all nations. The wars in which the Britons were so frequently engaged were little conducive to scientific attainments; and perhaps no individual before Roger Bacon, who flourished in the thirteenth century, ought to be considered as at all learned. This enquiry is, however, foreign to our purpose. The establishment of the College of Physicians in London, by the charter of king Henry VIII. in 1518, may be considered almost the first event directly favourable to the improvement of medicine. Linacre, a man, according to Dr. Freind, of a bright genius and clear understanding, as well as unusual knowledge in different parts of learning, was its first president, and remained so till his death. He published a translation in Latin of different parts of Galen, of which it has been remarked that, from the exactness and propriety of the style, it might be supposed to have been written in a classical age. Dr. Freind in eulogising Linacre, more especially for the foundation of the college, observes, 'The wisdom of such an institution speaks for itself. His scheme, without doubt, was not only to create a good understanding and unanimity among

his own profession (which of itself was an excellent thought), but to make them more useful to the public; and he imagined that by separating them from the vulgar empirics, and setting them upon such a reputable foot of distinction, there would always arise a spirit of emulation among men liberally educated, which would animate them in pursuing their enquiries into the nature of diseases, and the methods of cure for the benefit of mankind.' In proof of this statement we may refer to the discovery of the circulation of the blood by Harvey, to the labours of Glisson on irritability, to those of Willis on the brain and the nervous system, and to the great improvement of our knowledge of the glandular and lymphatic systems by Joliffe, Wharton, and Needham, and more especially in later times by Dr. W. Hunter.

Dr. Denman laments that Linacre did not print his works in English, in which language they would have been generally read, have afforded immediate instruction, stood as good examples, and taught a proper method of writing. He attributes to this defect of Linacre the continuance of English medical writers in their former style; and for many

years little real progress in knowledge was made, or any titles heard of but those of Urinals, Judgment of Urynes, Anatomy of Urynes, Treasures of Health, Mirroures of Health, &c. In 1540 was published the first book on the subject of midwifery in England, entitled the Byrth of Mankynde, otherwise named the Woman's Book, by Thomas Raynold, physician; it underwent a second edition by Thomas Ray, a printer, whose name is not much known. It was illustrated with prints, and was held in high estimation. Dr. Raynold informs his readers that this book had been translated from the original Latin some years before by a studious and learned clerk; who having performed the task incorrectly, he, Dr. Raynold, had been at great pains to revise and enlarge it in another translation. Its original author, according to Dr. Smellie, was Eucharius Rhodion, whose book was in great esteem all over Germany; and in the year 1532, being translated into Latin and other languages, from the original high Dutch, became universally the Woman's Book over all Europe, and was introduced into England, when it was translated by this Dr. Raynold.

In the year 1578 the celebrated Harvey was born at Folkstone in Kent, and, having completed his studies at Cambridge, he went to Padua, where he graduated in 1602. In 1603 he published his treatise on generation; and afterwards engaging in the practice of midwifery, he published his *Exercitatio de partu*. Sydenham also soon afterwards noticed the diseases incident to childbed women, and those of young children.

It is now proper to remark, that more general attention began to be bestowed on midwifery; its great importance, as a part of the healing art was fully appreciated; and the example of Harvey, who had *personally* engaged in its practice, was followed by the calling in of men practitioners in all difficult cases. Astruc assures us that the epoch of the employment of men-midwives goes no farther back than the first lying in of madame de la Valiere, mistress of Louis XIV. in 1663. She sent for Julian Clement, a surgeon of high reputation. He was conducted with great secrecy to the house, the lady's face was covered with a hood, and the king is supposed to have been concealed in the curtains. The same surgeon was em-

ployed in the subsequent labours of this lady, and as he was very successful, men-midwives afterwards came into repute ; the name of accoucheur being given them.

It is then the fact that obstetric science made but little progress in Europe till the seventeenth century. The very reverse of this appears to be the case in China. In that empire, according to the latest accounts, both physic and surgery are still in a state of the utmost degradation ; but, for some hundred years, the art of midwifery has been practised by a set of men destined to the purpose by order of government. These men, who hold in society the same rank which lithotomists formerly did in this country, are called in whenever a woman has been a certain number of hours in labour, and employ a mechanical contrivance for completing the delivery, without injury to the infant. A certain number of these individuals is allotted to each district of a certain population. It is said that the Chinese government was led to make this provision in consequence of many women dying undelivered, and that, in the majority of cases, the obstacles might have been removed by very simple mechanical expedients.

These facts were communicated by a gentleman who resided upwards of twenty years as surgeon to the British factory at Canton.

About 1634 the works of Ambrose Pare, the first modern who had made any considerable improvement in midwifery, were given to the world. The reputation of Raynold's book, which had maintained its standing for nearly a century, was now destroyed. Pare expressly orders, in all preternatural cases, that the child shall be turned, and brought away by the feet, thus at once deviating from the erroneous practice of the ancients, which had in a greater or less degree prevailed until his day. At this time surgery was more cultivated in Paris than in any part of the world; and the obstetric department of the Hotel Dieu was erected, into which parturient patients, destitute of the necessaries of life, were admitted. In the year 1668 Mauriceau published a *Treatise on Midwifery*, which exceeded every thing before made public on that subject. He gives a very full account of all the different kinds of labour; and the book having been translated into English, by one of the sons of the celebrated Dr. Chamberlen, continued in great estimation for many

years. Dr. Chamberlen and his three sons were contemporary with Mauriceau, and for some time they preserved to themselves the exclusive advantage arising from the knowledge of the forceps and lever. Chapman, however, made public a description of this instrument in 1773; although, previously to this period, instruments, differing from those described by the Arabian writers, had been used in Germany, France, and other places. The success attendant on the practice of the Chamberlens induced a too frequent use of the forceps; which gave rise to publications, impugning the propriety of interfering with the efforts of nature, and of any endeavours to hasten the birth of the child.

Dr. Maubray, the first public teacher of midwifery in this country, coincided in these views, and in a book entitled "The Female Physician, or the whole Art of new improved Midwifery," violently declaims against the use of instruments. The names of Dionis and Deventer may be next mentioned, both of whom concurred in deprecating the use of instruments in midwifery. Deventer was originally a watchmaker. He entertained the opinion that the wrong positions of the os in-

ternum and fundus uteri are the principal causes of lingering and difficult labours.

In 1727 appeared Dr. Simson's work, entitled the System of the Womb, a production of considerable ingenuity, but not of much use in practice. Chapman, who was the first public teacher of midwifery in London, published a Treatise on its Improvement in 1773. In the year 1734 Dr. Hody published a Collection of Cases in Midwifery, written by Mr. William Giffard. He gave a plate representing the forceps; and was, it is generally believed, the first who asserted that the placenta might be attached over the os uteri.

About this time lived Sir Richard Manningham, who devoted himself to the practice of midwifery, and established a small hospital for the reception of parturient women only, which was the first of the kind in the British dominions.

It is, perhaps, scarcely necessary to pursue this narrative any farther. The names of Smellie, Dr. William Hunter, Denman, and of Levret and Baudelocque in France, are familiar to all professional readers, and a perusal of their works cannot fail to excite a

high admiration of their talents and industry. 'The English might be said from this time (1740) to have been in full possession of the subject; all the books written in the neighbouring countries being translated, public lectures given, and hospitals established, for the further improvement of the art; and, as all the books since printed may readily be procured, every one has an opportunity of forming his own opinion of their respective merits.'

A variety of circumstances thus concurred to forward the progress of the obstetric art; and it may with truth be affirmed that, although its cultivation was so long deferred, it has attained a degree of certainty and perfection, which places it in a rank at least equal, if not superior, to any other department of medicine. We are well aware that many other distinguished individuals might be mentioned, who have contributed very largely to its advancement; but some of them are still living; and we much prefer an allusion to their individual contributions in the subsequent part of this treatise; bringing forward their opinions on those subjects which they have either discovered, illustrated, or confirmed.

GENERAL DIVISION.

PART I.

**THE OBSTETRIC PROPERTIES OF THE PELVIS, CAREFULLY
NOTICING THOSE DEVIATIONS WHICH MAY OBSTRUCT
PARTURITION.**

PART II.

**THE DESCRIPTION OF THE GRAVID UTERUS, WITH THE
DOCTRINES OF CONCEPTION, STERILITY, AND THE SIGNS
AND DISEASES OF PREGNANCY.**

PART III.

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PART IV.

THE DISEASES WHICH BELONG TO THE PUERPERAL STATE.

PART I.

THE OBSTETRIC PROPERTIES OF THE PELVIS, AND THE DEVIATIONS WHICH MAY OBSTRUCT PARTURITION.

CHAP. I.

SECT. I.—*Explanation of the Pelvis.*

It is not our intention to enter at large into the anatomical description of the bones, joints, and ligaments of the pelvis: we shall consider them only so far as they are essentially connected with parturition and its consequences.

We find in the foetus and young subject, that the pelvis is composed of *eight* bones, viz. two ossa ilia, two ossa pubis, two ossa ischia, the sacrum, and the coccyx. Till the age of puberty these bones remain *distinct*, and this arrangement obviously af-

fords mobility, and allows the bones to adapt themselves to pressure. In difficult parturition therefore, and especially in breech presentations, labour may be thus somewhat facilitated. In the adult, on the contrary, from the *consolidation of the bony structure*, we can enumerate only *four* bones : the ossa innominata, or side bones of the pelvis ; the sacrum fitted in behind, and serving as a basis for the support of the spine ; and the os coccygis subjoined to the end of the sacrum.

Ossa innominata.—These bones form the principal part of the bulk of the pelvis, yet they are not very essentially connected with parturition. Bearing in mind that each os innominatum is made up of three distinct bones, the ilium, the os pubis, and the ischium, it is easy to understand the construction of the anterior curve of the outlet denominated the *arch of the pubis*. The anterior part of the ossa pubis forms its top, the processes of the ischia and pubis its sides, and the tuberosity of each ischium its base. Each os innominatum may also be divided into the body and wing, and it is by their junction with each other that an

angle or edge is formed, which is known by the appellation of the *brim of the pelvis*.

Sacrum.—This is a bone of considerable size, triangular in its shape, and curved, its convexity being posterior, its concavity in front, this latter part being denominated by accoucheurs the *hollow of the sacrum*. At the basis of this triangular bone there is a middle projection, which, in connexion with the body of the last lumbar vertebra, forms what is so frequently mentioned in midwifery, the *promontory of the sacrum*.

Os coccygis.—This bone possesses a considerable degree of interest to the accoucheur. It is usually described as consisting of one piece only. It is, however, made up of several, not unfrequently connected together by cartilage, hence acquiring a certain degree of flexibility, and a slight power of adaptation during the passage of the head of the child. In a few instances this bone is ankylosed with the sacrum, and in consequence is shortened and turned inwards, so as to diminish the advantages which are obtained by its receding when the child comes into the world. Denman says, that the impediment occasioned thereby at the time

of labour may be, and usually is, overcome by the force with which the head of the child is propelled, and the os coccygis is again separated from the sacrum, with a noise loud enough to be distinctly heard. He had known more than one circumstance of this kind. The insertion of the coccygei muscles of a portion of the levatores ani, and of slips of the sacro-sciatic ligaments into the sides of the coccyx, keeps it steady and prevents any lateral motion.

Ligaments.—The obturatores, and the external and internal sacro-ischiatic ligaments, alone possess obstetric importance, and for their description we refer to any anatomical work.

Joints.—The hip, the lumbar, the sacro-iliac joints, the sacro-coccygeal joints, and the symphysis pubis, may all be enumerated as belonging to the pelvis; but the last three claim from us peculiar attention.

Sacro-coccygeal joint.—This joint, as we have already observed, is moveable, enlarging, perhaps posteriorly, the outlet of the pelvis, to the extent of an inch. Its construction is similar to the other joints of the body. It has articulating surfaces invested

with cartilage and covered with synovial membrane. A capsular ligament connects the two bones arising all round from the extremity of the sacrum, and inserted all round into the base of the coccyx ; thus completing the articulation. This joint is occasionally the subject of disease. Its *anchylosis*, which we have already mentioned, is of rare occurrence ; and still more rarely produces any serious obstruction to parturition. We have, however, seen one case in which the birth of the child was much retarded by the encroachment of this bone on the capacity of the inferior outlet of the pelvis. It much more frequently occurs, says Dr. Blundell, that instead of *anchylosis* there is a *rigidity* of the parts. A woman may be forty years of age before she is married, and perhaps has a child at forty-one ; her health being vigorous, her flesh firm, her fibre rigid and unyielding. Now here a rigidity of the sacro-coccygeal joint, with a *rigidity* of all the adjacent parts, may prove a very formidable obstacle to labour, requiring the most able and judicious management. There can be no doubt, that in

a case of this kind the perforator may be required. It more generally happens, however, that the obstruction yields to powerful uterine efforts, and that no further injury ensues than a painful degree of tenderness, produced by inflammation about the joint. Such was the result, in the instance we have mentioned, where the lady for some months was compelled to resort to a contrivance when sitting, by which she avoided the possibility of pressure on the part. In Dr. Denman's admirable work on Midwifery, cases of the *disruption* of the sacro-coccygeal joint are mentioned. It is evident their treatment must be conducted on the general principles of surgery; and care must be taken that in their re-union the coccyx does not encroach on the capacity of the pelvis. It is scarcely necessary to state that *inflammation* of these joints will require the employment of the same means which are resorted to in inflammation of other parts of the body; such as leeches, cupping, fomentations, and a regimen of the antiphlogistic kind, suited to the strength of the patient. In scrofulous individuals the treatment must be

modified. Sea air, sea bathing, and generous diet, are invariably productive of the most benefit.

Symphysis pubis.—This joint has engrossed a large share of obstetric attention, and has ever been thought of great importance. It does not vary in its structure from other joints; it unites the ossa innominata in front, the ends of which are invested with cartilage, connected together by an interarticular portion of fibrous substance. The *principal* strength of this joint depends on its capsular ligament, the fibres of which are far more numerous on the *outer* than on the *inner part*, an arrangement wisely intended to prevent any narrowing of the anteroposterior diameter of the pelvis, in which direction contraction or deformity is most frequently found.

The symphysis pubis is occasionally the subject of acute inflammation, which goes on to the suppurative stage: this may arise spontaneously, or from injury done to the joint; but it is more frequently associated with gestation. The pain and heat about the part, its tenderness when pressed, and above all, the exacerbation of suffering on the slightest motion of the joint, cannot fail

to lead us to the seat of disease. It is here manifestly desirable to put a period to the malady in its earliest stage, and to prevent the formation of matter. General and local blood-letting, purgatives, diaphoretics, and above all, *rest*, cannot be too strictly enjoined. If, notwithstanding the adoption of these measures, suppuration should ensue, it will be easily ascertained. In some cases the general disturbance of system may be so great, that the patient may sink before the evacuation of matter : in others, who are more robust, the ligament may yield to absorption, and the pus may thus escape ; it will, however, be the duty of the practitioner, if the irritation be alarming, to anticipate this giving way of the ligament, and, by opening the joint, to procure for its contents an early vent.

Sacro-iliac joints.—These are susceptible of inflammatory action, and sometimes, though very rarely, of suppuration. Dr. Mansfield Clarke, in his able work on the diseases of women accompanied with discharge, mentions relaxation of these joints as not of infrequent occurrence. Pain in the back, and an incapability of standing for half

a minute unless supported on each side, are the diagnostic systems. Time is here the principal remedy, although considerable relief may be obtained from the application of a well-adjusted bandage. It is worthy of remark, that the same arrangement of ligamentous fibres occurs here as in the symphysis pubis, the greater portion being found on the outer side of the joint: a provision intended, no doubt, to prevent any impediment to the passage of the child.

SECT. II.—*Of the Separation of the Bones of the Pelvis.*

Great difference of opinion has existed on this point. It is a fact that, in many mammiferous animals, immediately previous to labour, a relaxation of ligaments, producing a separation of the joints, does occur. Ruysch and Harvey, judging from their own

observations, were convinced that a similar separation almost invariably takes place in the human female. Denman was inclined to believe that the degrees of separation of the junctions of the bones of the pelvis may be very different, and that when it proceeds beyond a certain degree it is to be considered as morbid. Smellie ventures to assert, from experience and observation, that this separation is by no means a usual symptom, though sometimes it may happen, in which case the patient suffers great pain, and continues lame in those parts for a considerable time after delivery. Burns considers the separation as no advantage, but a serious evil ; and in cases of deformed pelvis, when we should naturally look for its operation, did it really exist, we do not observe it taking place. “ It is well known,” he says, “ to every practitioner, that owing to the distension of the muscles during pregnancy, very considerable pain is sometimes felt at the insertion of the rectus muscle into the pubis, and it is also known, that sometimes, in consequence of pregnancy, the parts about the pelvis, and especially the bladder and the urethra, and even the whole vulva, may

become very irritable. This tender state may be communicated to the symphysis, or some irritation less in degree than that already mentioned may exist, which, in particular cases, seems to extend to the articulation, producing either an increased effusion of interstitial fluid in the intermediate cartilage, and thus loosening the firm adhesion of the bones; or a tenderness and sensibility of the part, rendering motion painful. In either case exertion may produce a separation, and certainly in some cases has done so. The separation is always attended with inconvenience, and often with danger, especially when it occurs during parturition; for abscess may take place, and the patient sink under hectic fever; or inflammation may be communicated to the peritonæum, and the patient die in great pain."

For ourselves we are not inclined to believe that *any such invariable relaxation* of the joints of the pelvis, as would materially facilitate the progress of difficult labour, *forms any part of the parturient process*; and we are the more inclined to this opinion from the fact that, when any separation has occurred

sufficient to produce this result, it has been much more than compensated by increased suffering at the time, and by a painfully prolonged inability to walk afterwards.

SECT. III.—*Of the Pelvis, considered in relation to the practice of Midwifery.*

Having thus briefly described the various bones, ligaments, and joints, of which the bony case of the pelvis is made up, we shall point out the obstetric properties which attach to the pelvis as a whole ; and, in doing so, our remarks will refer to what may be denominated a standard pelvis, or that which is most frequently found, when the skeleton is well formed. The pelvis of the human species, which is stronger in proportion to its size than in any quadruped, may be considered as an *arch*, supporting the weight of the superincumbent

body. Its position is such that a line passing from the third lumbar vertebra will fall upon the superior edge of the symphysis pubis: the cavity of the pelvis being projected so far backwards that the ossa pubis principally sustain the enlarged uterus in advanced pregnancy. Hence we see the reason of that *weakness* and *pain* which during this state is so frequently referred to the junction of these bones. It is perhaps worthy of remark, that the powers and properties of the pelvis depend much on its position. "In those animals which possess the greatest share of strength, the position of the pelvis is nearly perpendicular, and the two apertures of the cavity nearly horizontal, as may be seen in the elephant. In those which are distinguished by their speed or agility, the position of the pelvis is nearly horizontal, and the two apertures nearly perpendicular, as may be seen in the stag. In mixed animals, or those in which strength and speed are united, the position of the pelvis is neither horizontal nor perpendicular, but inclined, so as to partake, by different degrees of inclination, of the advantages of either position, as may be seen in the horse and ass."

Accoucheurs usually divide the pelvis into two regions, the one lying above, the other below the brim, the former being the *false*, the latter the *true* pelvis. Of that region which is lying above the brim it will be sufficient to observe, that *anteriorly* it is wide open, being bounded *posteriorly* by the lumbar vertebræ, and laterally by the iliac fossæ.

Its breadth, from the anterior superior spine of one ilium to another, is usually *eight* or *nine* inches; and its depth from *three* to *four*. It is evident that if the abdominal parietes are relaxed by the recumbent position, and the elevation of the knees and shoulders, we shall be able to examine the contents of this region satisfactorily, and ascertain pretty correctly any morbid circumstances connected with the pelvic viscera. The true pelvis, which as will readily be conceived is of great importance in the practice of midwifery, has been divided into *three* parts,

The *brim*,

The *outlet*,

And the *intermediate cavity*;

Or supposing the whole of the true pelvis to form a kind of canal, whose entrance and

outlet are somewhat narrower than the middle, it has been distinguished into the superior strait, the inferior strait, and an excavation.

The brim is generally of an *oval* figure, the *long* measure being from *side* to *side*, and the *short* diameter from *before* *backward*.

The average measurement of the short diameter is *four* inches.

From side to side *five* inches.

And the oblique, or diagonal measurement, which is described by a line stretching from the back of the acetabula to the sacro-iliac synchondroses, five and one-eighth, or five inches and one-fourth of an inch.

The brim varies in its make, being in some *circular*, in others more *oval*, in some *small*, in others *large*; but in general it is of an *elliptical* form, the regularity of the oval being broken by the promontory of the sacrum. The thorough comprehension of these simple facts will exert a very powerful influence on the management of cases where there is any deviation from the natural progress of parturition. In an ordinary labour, when the vertex of the child presents, we find, in the

commencement of the process, that the face is lying towards one side of the pelvis, and the occiput towards the other ; and thus, as the long axis of the head of the child corresponds with the long diameter of the brim of the pelvis, we find that it rapidly descends. If, however, this state of things be reversed, and the head of the child be so placed that its face, instead of lying laterally, is situated in front, it is very evident that difficulty must arise, as the long axis of the head is directly opposed to the short axis of the brim ; and if the head be large and the pelvis small, or if labour has proceeded so far that the head is wedged in its situation, we may be compelled to use the perforator.

In presentations of the feet, if the pelvis should be small and the head large, the child may be lost, and the soft parts of the mother materially injured, by want of attention to these facts. Now, in these cases, if, instead of any violent efforts at extraction, the practitioner were adroitly to introduce his hand, and turn the face of the child to the one side of the pelvis, so as to make the *long* measure of the head correspond with the *long* mea-

sure of the brim, the progress of the labour would be facilitated, and the difficulty overcome. It is also worthy of remark, that when we introduce the hand into the uterus, *a proceeding never to be adopted without absolute necessity*, we should carry it forward, when near the brim, by the side of the aperture, because there we find most room.

In the dimensions of the *inferior aperture*, or *outlet*, the proportions are reversed ; the narrowest part being from side to side. This however, it must be recollected, is entirely owing to the retreat of the coccyx, in consequence of the pressure it sustains from the child's head. From side to side the diameter is four, and, from before backwards, five inches. The form of the inferior aperture is very irregular, consisting, according to Dr. Blundell,* of three large scallops, one upon either side, and one in front, of vast obstetric interest, known under the name of the arch of the pubis. If, however, we examine a pelvis, with the ligaments still in connexion, the shape of the outlet is *quadrangular*. It is

* Vide his valuable and comprehensive Lectures published in the Lancet.

here necessary to dwell for a moment, as it is important in practice, on the difference between the long axis of the brim, which is from side to side, and that of the outlet, which is from before backward. The head of a child enters the pelvis with the face to one side, and the occiput to the other ; before it emerges, a change in its situation occurs, and the face is thrown into the hollow of the sacrum, while the occiput is found under the arch of the pubis. The reason of this procedure is plain : the long axis of the head is thereby made to correspond with the long axis of the outlet, and in crural presentations it is necessary to attend to this point of anatomy ; for if at the brim there be great difficulty, when the axes are in opposition, at the outlet we shall find an equal obstacle, if the face be situated towards the pubes instead of in the hollow of the sacrum.

We cannot better impress this fact on the minds of our readers than by the statement that the cavity of the pelvis is incurvated, and that, in consequence of this incurvation, a straight line will not pass through its centre. The axis of the brim is *downward* and *backward* ; that of the outlet is *downward* and

forward; and the line of motion of the child's head must of course correspond to the axis of that part of the pelvis in which it is situated. In the cavity of the pelvis we must especially notice the *hollow of the sacrum*, as the facility or difficulty of parturition very much depends upon it. It serves as a receptacle, making room for whatever part of the child may be descending, in presentations of the vertex, of the face, and of the breech.

The *depth of the pelvis* is a point of consequence, more especially in estimating the progress of labour. We find at the symphysis pubis it does not exceed an inch and a half; or at most two inches, posteriorly from the base of the sacrum to the point of the os coccygis; when under pressure it is about four times as deep as in front; and laterally the depth of the inferior extremities of the ischia is about four inches. Bearing these facts in mind we shall not always allow ourselves to imagine, *because we can readily feel the child's head in the front of the pelvis, that its birth is instantly to take place*; but, remembering the intermediate depth of the pelvis laterally, and its very much greater depth posteriorly, we shall be fully aware that diffi-

culty may be experienced from incarceration. In making examinations it is well to avail ourselves of the *shallowness of the pelvis in front*, which affords the utmost facility for carrying the fingers considerably beyond the brim. We may remark here, that the arch of the pubis in ordinary labour, when the head is at the outlet, serves the very important purpose of allowing the occiput sufficient space to lie forth in front, by which it relieves the pressure, and facilitates the passage of the face through the hollow of the sacrum. The upper edge of the ossa pubis is slightly everted, thus preventing any impediment to the entrance of the head of the child into the cavity of the pelvis; and, at its lower edge, there is some degree of divergence; an arrangement by which the advancing motion of the head is very much facilitated.

We cannot better conclude our observations on the general properties of the female pelvis than by pointing out its bearing on the spine, and by a description of those marks which distinguish it from the pelvis of the male. By the plane of the brim, is meant an imaginary surface, closing in the superior aperture of the pelvis, and forming a sort of

flooring there. The pelvis unites with the spine in such a bearing that the plane and the spine form an obtuse angle with each other; the sacrum lying above and posteriorly; the symphysis anteriorly, and below. In the living female, when the womb, enlarged by gestation, is resting on the brim, the mouth or neck lie inferiorly and backward, while the fundus or upper parts are placed anteriorly so as to lie out beyond the ensiform cartilage. By a knowledge of these facts we are enabled to place our patients in positions which will materially facilitate obstetric operations. In placing the brim vertically, the body should be inclined forwards in its horizontal position; the patient should be placed in the semi-recumbent posture, or half sitting, half lying; if, for the reduction of a retroverted uterus, it is desirable to invert the plane of the brim, this may be effected by placing the patient on her knees and elbows.

The observation that the whole of the female skeleton is in general smaller, lighter, and smoother than that of the male, is particularly applicable to the female pelvis; in addition to which we cannot fail to notice that the spines and processes of the ossa innomi-

nata are farther distant from each other. The os sacrum is broader and incurvated to enlarge the cavity of the pelvis. The wings of the ilia are flatter and more expanded: in the male the brim of the pelvis is circular, and has its greatest extent between the ossa pubis and os sacrum; in the female the brim is oval, and the largest diameter is from side to side. In the male the pelvis is of considerable depth; in the female it is shallow. The arch of the pelvis in the male is contracted; in the female it is capacious to make room for the head of the child. In the male the outlet is small; in the female of considerable capacity.

SECT. IV.—*Of the Deformity of the Pelvis.*

Under this appellation are classed all those deviations from the standard pelvis which at all interfere with the natural progress and completion of labour. It will be manifest, from a slight examination of the deformed pelvis which are to be found in our museums, that distortion may arise from various causes, and that no part of this bony structure is exempted from its prejudicial influence. It is, however, a pleasing circumstance, that we do not frequently meet with those higher degrees of contraction which require us to sacrifice the life of the child to the safety of the mother. Fracture and rickets are not infrequent causes of a distorted pelvis ; but to mollities ossium, or a softness of the bones, we may attribute the majority of cases ; and here the false as well as the true pelvis partakes of the deformity, and, of this latter region, both the brim and the outlet may exhibit incurvation.

Frequently, where there is a good deal of distortion about the pelvis generally, certain parts may suffer much less than others ; thus, while the brim is greatly distorted, the outlet may deviate but slightly from the standard dimensions. Specimens are in existence which, while they show great contraction or distortion on one side, make a near approximation to the natural dimensions on the other. It is not our purpose to enter at length into the various ways in which deformity may be produced, although it is by no means difficult to conceive that, where the proper consolidation of the bony structure is prevented, as in rachitis, the form of such a cavity as the pelvis must be entirely dependent on any pressure to which it may be subjected during the continuance of the disease or the progress of growth. We once saw a girl at Nottingham, who seemed not to have one well formed bone throughout her whole body, owing to rickets. At the brim, we sometimes meet with distortion produced by the approximation of the promontory of the sacrum towards the symphysis pubis, the length of the brim being increased between the sides, and abbreviated between the front and back. It is easy to

explain the production of this kind of deformity. The pelvis supports the weight of the superincumbent body both in sitting and standing, by which the sacrum is pushed forwards, while the acetabula, from the exertion of similar influence from below, or rather from their serving as fulcra for the inferior extremities, when standing, are gradually projected towards the sacrum, and in some extreme cases the acetabula and promontory are so nearly approximated, that not more than a few lines of opening are left between them.

At the outlet also distortion occurs, and here it is occasioned by the approach of the tuberosities of the ischia, and the incurvation and advance of the sacrum and coccyx. Dr. Dewees, whose work on Midwifery is a contribution to the science of the highest practical value, believes that the united experience of all the American practitioners would not have led to a correct conclusion on the subject of deformity of the pelvis. Its occurrence is so rare in America, that many accoucheurs of extensive experience have never met with it, and Dr. Dewees himself has not encountered more than three cases of extreme deformity in American women, and in

none of these was labour impracticable. We believe that, in the greater number of instances of deformity, the brim of the pelvis is principally in fault; and that, when the contraction of this part is so considerable as to require the employment of instruments, it will most frequently be found narrowed from *before backwards* and not from *side to side*: the contraction here may arise from an approximation of the ossa pubis to the sacrum, or from the acetabula encroaching upon the diameter of the brim in the same direction. This, however, is not always the case, and we lately met with an instance in which we were compelled to alter the position of the head, placing the smaller fontanelle to the pubis and the larger to the sacrum. Dr. Dewees makes the following observations on this subject, which in association with the case which follows them we have great pleasure in transcribing. “ We have said above, that when a pelvis is injured in its proper proportions, it is almost always in the small diameter of the superior strait. Dr. Denman, however, declares it to be always in this diameter when this strait is faulty, and never in the direction of the great one; but in

this we must differ from this experienced and respectable practitioner ; for it was our chance to have met with two instances of this kind in our own practice, besides being in possession of a natural pelvis, where the diameters at the upper strait are reversed. Besides, Baudelocque admits the fact, though he says it is very rare.

“ One of the cases alluded to above, occurred to us within a few days, and, as it is one of some interest from its rarity, we will relate it. On the morning of the 18th of March, 1824, at 9 o'clock, A.M. we were called to Mrs. —, in labour with her seventh child. She had been complaining during the whole of the previous night, but the pains did not become efficient in her estimation, until we were sent for—at this time the pains were very slow, but pretty forcing. Upon examining her per vaginam, the os uteri was found but little dilated, much tumefied, but not rigid. As there was no immediate necessity for our presence, we took our leave, desiring the nurse to send to us immediately, should any change take place before we intended to visit her again. We saw her several times during the day, although no alteration had taken place,

in either the force or frequency of her pains. At about 10 o'clock, P.M. of the same day, we were again summoned to our patient, in consequence, as the nurse said, of her having had several pains nearer each other and smarter. Upon a second examination every thing was found pretty much as it was in the morning—in the course of two hours more the pains became more frequent and urgent, and the os uteri was found more dilated, but still tumid; the head of the child, still very high up, indeed was scarcely to be felt. Two hours more were unprofitably employed, in the hope of the advancement of the head; thinking it probable that this did not take place because the membranes were entire, and apparently more than usually rigid, we ruptured them, and gave issue to a very moderate quantity of liquor amnii—the head did not descend as was hoped, though more within reach; and as the pains were now rather brisker, without manifestly advancing it, we were induced to examine into the cause of the delay more particularly. Upon a careful search being made, as regarded the pelvis, it was found that the point of the coccyx looked very much up into the pelvis, but that

the projection of the sacrum could not be felt by the finger, but seemed to retire very much posteriorly; the sides of the pelvis could be easily traced at the upper strait; and on the anterior portion of the pelvis, immediately behind the symphysis of the pubes, two fingers could be introduced with their breadth between it and the child's head. The head of the child was found to occupy completely the transversal diameter of the superior strait—it now occurred to us, that this was an instance of deformity, in which the transversal diameter was injured, and had procured an increase in the antero-posterior diameter; and that the head being placed diagonally above, could not enter the strait in this direction. With this in view, we introduced our hand, and placed the head in such manner as to make the posterior fontanelle answer to the pubes, and the anterior to the sacrum, and then withdrew it. We now gave twenty grains of the ergot to the patient, with a view to make the pains follow each other more quickly, as well as to render them more powerful—but the first pain after this made the head descend to the lower strait, and four more delivered it—there was a little delay with

the shoulders, but they followed the second or third pain. "This lady, though the mother of six children previously, never had had any untoward accident from this peculiar conformation—but her labours she represented as always having been very tedious and severe—four hours of extremely hard pains was the shortest period she had ever known, after she got what she called 'to be in earnest.'"

In addition to these obstacles to parturition, there may be impediments arising from other causes. Exostosis from the pelvic bones may materially diminish the capacity of the brim, the intermediate cavity, or the outlet. Steatomatous and scirrhus tumours, incapable perhaps, from their size or hardness of being pushed out of the way of the child's head, may as seriously obstruct the progress of labour, as though they were producing absolute distortion. An enlarged ovarium, or vaginal hernia, may oppose delivery, and instances are on record where such obstacles have been attended with fatal results.

Mr. Burns once met with a dreadful case of tumor obstructing delivery, which we shall relate in his own words, as it is highly creditable to his skill and courage. The attach-

ments of this tumour were so extensive, and it was of so great size as to fill the pelvis, permitting only one finger to be passed between it and the right side of the basin. It adhered from the symphysis pubis round to the sacrum, being attached to the urethra obturator muscle and rectum, intimately adhering to the brim of the pelvis, and even overlapping it a little towards the left acetabulum. It was hard, somewhat irregular, and scarcely moveable. The patient was in the ninth month of pregnancy; there was no choice, except between the Cæsarian operation and the extirpation of the tumour. The latter was agreed on, and with the assistance of Messrs. Cowper, Russell, and Pattison, Mr. Burns performed it on the 16th of March, a few hours after slight labour pains had come on. 'An incision was made on the left side of the orifice of the vagina, perinæum, and anus, through the skin, cellular substance, and transversales perinei muscles. The levator ani being freely divided, the tumour was then easily touched with the finger. A catheter was introduced into the urethra, and the tumour separated from its attachments

to that quarter. It was next separated from the uterus, vagina, and rectum, partly by the scalpel, partly by the finger. I could then grasp it as a child's head, but it was quite fixed to the pelvis. An incision was made into it with the knife, as near the pelvis as possible; but, from the difficulty of acting safely with that instrument, the scissors, guided by the finger, were employed when I came near the back part; and, instead of going quite through, I stopped when near the posterior surface, lest I should wound the rectum or a large vessel, and completed the operation with a spatula. The tumour was then removed, and its base or attachment to the bones dissected off as closely as possible. Little blood was lost, the pains immediately became strong, and before she was laid down in bed, they were very pressing. In four hours she was delivered of a still-born child above the average size; peritoneal inflammation, with considerable constitutional irritation, came on; but by the prompt and active use of the lancet and purgatives, the danger was soon over, and the recovery went on well. In the month of May the wound

was healed. On examining per vaginam, the vagina is felt adhering as it ought to do to the pelvis, rectum, &c. The side of the pelvis is smooth, and a person ignorant of the previous history of the case, or who did not see the external cicatrix, would not be able to discover that any operation had been performed. After a lapse of more than two years she still continues well."

In reference to these distressing cases, the following rules are prescribed by Mr. Burns, and for more extensive information we beg to refer our readers to the very able and elaborate work from which they are extracted.

1st. "Whenever the tumour is moveable it should be pushed above the brim of the pelvis at the commencement of labour, and prevented from again descending before the head of the child."

2d. "That we should never permit the labour to be long protracted, but early resort to means of relief."

3d. "As it is impossible to decide with certainty on the nature of the contents of many of these tumours, we should in all cases, where we cannot push them up, try the effects of puncturing with a trocar. If the contents

be fluid, we evacuate them more or less completely ; if solid, we find the canula, when withdrawn, empty, or filled with clotted blood ; if fatty, or cheesy, the end of the tube retains a portion ; and we are thus informed of its nature."

4th. " When the size of the tumour cannot be sufficiently or considerably diminished by tapping, I am inclined, from the unfavourable result of cases where the perforator has been used, and from the severe and long-continued efforts which have been required to accomplish delivery, to recommend the extirpation of the tumour, rather than the use of the crotchet. There may, however, be situations where the incision ought to be made in the vagina ; but these are rare. But extirpation cannot in any mode be proposed, if firm cohesions have been contracted between the tumours and vagina or rectum."

5th. " If the extensive connections, extent, or nature of the tumour, or danger from hæmorrhage, prohibit extirpation, or the patient will not submit to it, and it has been early ascertained that tapping is ineffectual, I deem it an imperative duty to urge the perforation of the head or the extraction of the child as

soon as the circumstances of the case will permit.

6th. " Much and justly as the Cæsarian operation is dreaded, it may, with great propriety be made a question, whether in extreme cases, that would not be less painful and less hazardous to the mother than those truly appalling sufferings which are sometimes inflicted by the practitioner for a great length of time, when the crotchet is employed, while it would save the child, if alive at the time of interference: I am aware that it may be objected to this opinion, that in those cases, the tumour being softer than bone, the same injury will not be sustained as if the soft parts had been pressed with equal force, and for the same time, against the bones of a contracted pelvis; and that, in point of fact, recovery has taken place, though the strength of two able practitioners was exerted during several hours; but such an instance cannot establish the general safety of the practice.

7th. " It is scarcely necessary for me to add, that there may be different degrees of encroachment, which admit of the safe and successful application of the forceps."

A *small pelvis* will occasionally give rise to difficulty in parturition; for although it generally happens, if the woman be small, that her child will be small also, and as this kind of pelvis exists apart from contraction, maintaining indeed its shape and symmetry, labour will very frequently proceed with facility. Yet it may so happen that a small woman shall produce large fœtuses. An instance of this lately occurred to me, where, in consequence of the disproportion existing between the child and the pelvis, I was compelled to use the perforator, after having in vain employed the forceps.

The treatment of these cases is by no means easy; we are only aware, indeed, of two methods by which, if the deformity be extreme, and the full term of pregnancy be completed, women can be relieved from this most calamitous situation. We may perform embryotomy, or the Cæsarian operation. And, in relation to the first of these proposals, Burns has ascertained that when the standard head is reduced in the best possible way, by the removal of the frontal, parietal, and squamous bones, it will require for its passage an aperture of three inches

in length, and of one inch and three quarters in breadth. If this space does not exist, the Cæsarian operation, of the success of which we do not in this country entertain any very favourable anticipations, must be resorted to.

Mr. Barlow, of Blackburn, used to relate the following case :—A robust countrywoman in vigorous health, the mother of several children, was thrown out of a cart, which went over her, and broke her pelvis to pieces. She was carried home, and lay a long time ; but at last recovered. She again became pregnant, and was attended by a woman ; but the pelvis was so contracted by the displacement of the fractured bones, and the mass of osseous matter by which they were consolidated, that the midwife was unable to deliver her. Mr. Barlow was called in, and was persuaded she could not be delivered without the Cæsarian operation. As soon as she was willing to submit to it, feeling there was no hope in any other way, he performed it, and a dead child was extracted. The mother herself did very well ; in a fortnight after the incisions were made she got up, and in three weeks she was attending to her usual concerns.

In cases where the deformity does not so materially diminish the capacity of the pelvis, as in the instances we have described, we shall be justified in waiting for the full exertion of the natural powers. The obstacle may exist in one particular point of the brim, and, this being surmounted, the future progress of the labour may be uninterrupted. We have ourselves been surprised, after waiting twenty-eight hours without any advance of the head, and having determined to perforate, suddenly to discover that the difficulty was overcome, and the labour was completed with unusual celerity. It may appear singular, but it is nevertheless true, that such changes do arise as sometimes to render the use of instruments unnecessary in a labour occurring in immediate succession to one where their employment had been absolutely required. We were once called to a case of presentation of the breech, where, owing to a contraction of the brim, from before backwards, we were compelled to diminish the capacity of the head before we could extract the child. This lady again became pregnant, and at the commencement of labour it was ascertained that the vertex presented, the waters passed off, and

the pains continued remarkably powerful and forcing for eighteen hours. At the expiration of this time she was much exhausted, but the head remained immovably jammed at the brim. The long forceps was applied, but no justifiable force which could be exerted with it, enabled us to surmount the obstacle, and we were at length driven to the use of the perforator. In a third labour of this lady, occurring at the full time, although summoned very early we could not reach her before the birth of an average-sized child. A fourth labour, in which we have only a few weeks since attended her, has proved equally fortunate, and the child is by no means small.

Dr. Blundell's rule in cases of this kind, and, indeed, whenever instruments are thought to be required, is remarkably simple and very applicable. *If, says he, no dangerous symptoms appear, we ought to give a fair trial to the full efforts of the uterus for twenty-four hours, after the discharge of the liquor amnii, abstaining as long as may be from the use of instruments, for they are great evils, and a meddling midwifery is bad. But should dangers arise referrible to the prolongation of the labour, or should the woman be in labour for*

twenty-four hours after the discharge of the waters, the head not advancing, a trial of the lever or forceps becomes necessary. Further, should the dangerous symptoms become pressing, or should the womb have been in action for eight-and-twenty hours, the head still not advancing, the *perforator must be employed.* Again, a woman may have had several children destroyed in succession, and, pregnancy still occurring, she is very anxious to become the mother of a living child. Here we may propose to induce labour at seven months, or seven months and a fortnight; thus preventing that complete growth of the foetus which in all probability renders its destruction unavoidable; and, as children do live when born at this period, we give our patient a chance of bringing into the world a living child.

Large pelvis.—Having described the difficulties incident to those deviations from the standard pelvis which are produced by contraction and distortion, as well as those which arise from a pelvis naturally small, yet retaining its symmetry and shape; we shall now detail the inconveniences produced by a pelvis exceeding in its dimensions that which we denominate standard.

It is very evident that difficulty in the passage of the child cannot originate from a pelvis of this kind. The uterus may, however, in consequence of augmented pelvic capacity, remain long below the brim, and thus increase the probability of its prolapse; and, if the bladder be distended, of its retroversion. These are circumstances which will readily suggest themselves on the slightest reflection, and we need not dwell on the treatment by which they must be remedied. Another, and perhaps the most serious evil arising in cases of this kind, is the suddenness with which labour may come on, the uterus descending to the orifice of the vagina before the os uteri is fully dilated. We were in attendance not long since on a patient who had borne many children, where the pelvis was capacious, and the softer parts relaxed. A few monitory and slight pains had been experienced, but as there was scarcely any progress made, we were preparing to leave the house; before we reached the door one single pain expelled the child. Occurrences of this nature should induce great caution whenever we are called upon for a legal opinion. A woman, pregnant perhaps for the first time,

and of an illegitimate child, is naturally ignorant of the changes which precede labour; her pelvis is unusually large, and in an attempt to relieve the bowels, the child is suddenly precipitated into a situation where its destruction is inevitable. All this may occur without any guilty intention on her part to sacrifice the infant; and in a court of law she ought to have the full benefit of these palliative circumstances.

SECT. V.—*Of the soft parts contained within the pelvis.*

The observations hitherto made on the pelvis have referred to that condition where it is divested of the lining it receives in the recent state, from muscles as well as from ligamentous and membranous expansions. There can be no doubt, that the structure of parts is much better understood in this way; for, by regarding them at first as they really are in the skeleton, we acquire much clearer

notions of the purposes they serve, of the manner in which other parts exert their influence upon them, and of the combined and finished operations of the whole. The necessity of some lining is sufficiently manifest when we consider the importance and delicacy of the organs situated in the pelvis; among which may be enumerated the uterus, urethra, bladder, and ovaries, fallopian tubes, and rectum. The pelvis has been frequently described as connected with the cavity of the abdomen; but, as we shall not discuss either the structure or diseases of the abdominal organs, it appears desirable to look upon the pelvic cavity as distinct from that of the abdomen. We find two muscles at each side of the pelvis internally, the iliacus and the psoas. The former by its radiated fibres fills up the iliac fossæ; and the psoas, originating from the lateral parts of the lumbar spine, descends to the inner edge of the brim to be inserted into the trochanter minor of the femoral bone. The levator ani is arising from the whole circumference of the brim of the pelvis, and descending, may be traced all the way round to the extremity of the rectum. Under the symphysis it is

pierced by the urethra and vagina, and, during the passage of the child's head, it is easy to suppose that these fibres must be considerably stretched and distended. From the membrane that fills up the thyroid hole, and from the inner surface of the ischium, the obturator internus arises, running backwards and downwards, and terminating by a tendon to be inserted into the rest of the trochanter. The pyriformis originates from the under part of the hollow of the sacrum, and passes out at the sacro-sciatic notch to be inserted with the obturator. These muscles sustain pressure, and perhaps injury in difficult and protracted labour, which may explain the uneasiness so often felt in moving the thighs. The coccygeus commences from the spine of the ischium, running posteriorly to be inserted into the side of the coccyx, in order to move and support it. We now see how the pelvis is lined with muscular substance, affording a slight compressible support to the gravid uterus and pelvic viscera. On a parallel with the inner margin of the psoas, along the posterior half of the brim of the pelvis, we find the course of the iliac artery and vein, and encroaching a little when

distended on the lateral capacity of the brim. They quit the linea-ilio pectinea at between two and three inches from the symphysis, and, passing over the acetabula, they leave the pelvis with the psoas muscle. The iliac vessels escape pressure entirely during labour, but the hypogastric must, in certain positions and sizes of the head, sustain it.

The first, second, and third pair of lumbar nerves, furnish some branches, which, passing out through the substance of the muscles lining the iliac fossæ, supply the upper and outer part of the thigh; and it is to the stretching and tension of these nerves, especially in the latter periods of gestation, that we attribute the painful uneasiness which is so often experienced about the pubes, groins, and in the small of the back. So likewise we attribute to the obturator and crural nerves that weakness and uncertainty of gait which characterises some pregnant women. The lymphatics preserve the same course as the iliac vessels, forming a plexus from Poupart's ligament to the lumbar vertebræ. The rectum is by no means an unimportant part of the contents of the pelvis; it is situated at the left side of the projection of the sacrum,

and is known sometimes to acquire an immense size from the accumulation of feculent matter, giving rise to very uncomfortable feelings.

SECT. VI.—*Of pelvimeters, or the examination necessary to ascertain whether the pelvis be well or ill formed.*

A variety of instruments have been devised for obtaining an accurate knowledge of the different measurements of the pelvis; some being constructed for the attainment of this information from within the pelvis, while others, with the same design, are only intended for external application. It is evident that much difficulty must be experienced in the use of mechanical means for this purpose; and, even when employed successfully, we doubt whether their indications be superior to those which may be procured by the skilful and experienced enquiry of the fingers. We believe, if the fore finger be passed to the

brim of the pelvis, a sufficiently correct notion of its capacity for obstetric purposes may be secured, by carefully noting the length of space it requires to pass from the symphysis pubis to the promontory of the sacrum, and the extent it must traverse before it can stretch from one side to the other. By moving about the fingers in the cavity and the outlet, similar information may be acquired ; and if in addition to all this, we ascertain whether the head has entered the brim to any extent, and the time which has been required for the progress thus far, we shall not be very ignorant of the dimensions of this most important part. The only pelvimeter we have seen, of easy application, is one designed to measure the pelvis externally. It may be denominated a pair of callipers, one leg of which is fixed on the symphysis pubis, and the other a little below the spine of the last lumbar vertebrae, three inches being allowed for the thickness of the sacrum and the symphysis : thus, if the thickness of the whole be seven inches, we deduct three, leaving four inches as the measurement of the brim, in its anteroposterior diameter. Baudelocque expresses himself well pleased with this kind of mea-

surement, and says that he has not found a difference of a line in the examination of five-and-thirty pelves, distorted and contracted in all ways and in all possible degrees. The roundness of the hips, and their equality, the prominence of the mons veneris, the space of eight or nine inches between the anterior superior spines of the ossa ilia, and the moderate depression of the superior and posterior parts of the sacrum, are evidences of a favourable conformation. The converse of these circumstances, more especially if there be any curvature of the lumbar spine, denotes a faulty construction of the pelvis.

CHAP. II.

SECT. I.—*Of the Head of the Child.*

Having now completed our observations on the pelvis generally, and having noticed its particular properties, and the various purposes they are intended to serve, we shall proceed to examine the structure and dimensions of the child's head ; as, on the proportion which these measurements bear to the bony canal through which it is destined to pass, the facility or difficulty of delivery will much depend. The head, which is oviform in its shape, has its greatest length from the chin to the vertex, which, on the average, is about five inches and a quarter ;—Its shortest from side to side, between the tuberosities of the parietal bones, the measure being three inches and a half ;—From the lower part of the occiput to the upper part of the forehead it is about four inches ; and, from the

lower part of the forehead to the upper part of the occiput, about four inches and a half. These are the average or standard dimensions of the head; yet it is clear, owing to the nature of the sutures, the conformability of the bones, and their cartilaginous union, that the shape of the head may be altered, and its length be increased, while its breadth is diminished. Dr. Joseph Clarke (*Philosophical Transactions*, vol. lxxvi.) says, that the size of the male head is generally a twenty-eighth or thirtieth part larger than that of the female; and he also supposes that one-half more males than females are born dead, from tedious labour, or increased pressure on the brain; and to the same causes he ascribes the greater number of deaths of males soon after birth. In twin cases again, as the children are smaller, he calculates that only one-fifth more of males than females are still born.

The head of the child differs from the head of the adult; the cranium of the latter is completely ossified, and consequently firm, compact, and unyielding. The fœtal cranium, on the contrary, is made up of various bones, loosely connected by membrane, and

possessing a degree of flexibility, which admirably adapts it to the compression it may have to sustain in its transmission through the pelvis. Its sutures are not riveted together, the bony edge of one bone being directly united with that of the adjoining, as in the adult: they are maintained in connexion by the interposition of cartilage; and hence arises the great pliability of the foetal skull, the advantage of which cannot fail to be perceived when its bulk is greater than natural, or when there is any diminution of the capacity with deformity in the shape of the pelvis. The frontal, the parietal, the occipital, and the temporal bones, compose the projecting part of the cranium, and it is in the connexion of these bones by suture that certain indications arise which it is of great importance to the accoucheur fully to understand.

The frontal suture unites the two pieces of the os frontis together, and stretches from the sagittal suture to the root of the nose. The coronal suture extends across the head from ear to ear, crossing the sagittal and frontal at right angles, and joining the os frontis to the ossa parietalia. The lamb-

doid suture is situated posteriorly, and unites the occipital bone with the ossa parietalia. The sagittal, the most important suture of all in practice, passes from the front to the back of the head, uniting the ossa parietalia to each other. If we examine the foetal head still further we shall perceive two openings, formed by a deficiency of bony matter, in which slight pulsation may be perceived, and which are denominated the fontanel. The larger fontanel is situated anteriorly, at the junction of the sagittal and frontal with the two limbs of the coronal suture; it may be distinguished by its quadrangular shape, by its extent, and by the meeting of four sutures for its formation. The lesser fontanel is situated posteriorly at the point of union between the sagittal and lambdoidal sutures, and may be distinguished during labour, by its triangular shape, and by the meeting of only three sutures for its formation. These remarks comprise the whole of what is important to be known, in relation to the standard head of the foetus; and before we explain the mode by which the child passes into the world, we must premise that by the term presentation, or "the presenting part," we mean

that part of the child which lies over the centre of the pelvis, and by the term situation, when speaking of the passage of the child through the pelvis, we mean its place in relation to the surrounding bones. Thus, when the vertex presents, one ear is situated to the symphysis pubis, and the other to the sacrum, the face is towards one side of the pelvis, and the occiput to the other.

SECT. II.—*Deviations from the standard head.*

A head unusually small, as we have just now observed of a pelvis unusually large, can occasion no difficulties in parturition. The converse of this proposition is true of a head which exceeds in its dimensions that with which we generally meet ; more especially if the pelvis be small, and the bones of the head more than commonly ossified.

When the vertex or face has been long incarcerated at the brim, or in the cavity of the pelvis, it is very possible to be deceived as to the part which really presents. If the face

be over the centre of the pelvis it may suffer compression, the blood accumulating, and the soft parts becoming swelled and tense. Here we do not find the inequalities which generally characterise this presentation ; the same remarks may be reiterated of the vertex, where it has been long detained in its passage through the pelvis. We have seen many cases where the scalp has been so exceedingly tumefied as to resemble the breech more than the head. The hydrancephalic cranium may generally be detected by the distension of the scalp covering the vertex, by the breadth of the sagittal suture, and perhaps by an obscure fluctuation in this part, and towards the fontanel. We are not always to suppose that such a case presents insuperable obstacles to the completion of the birth by the natural efforts. Give to these efforts a fair trial, and the result will frequently exceed the most sanguine expectations ; for, although there are many cases in which instrumental aid will be required, yet if we act in accordance with the rule already laid down, of not interfering till after a period of twenty-four or even thirty-six hours, and not even then unless symptoms

arise plainly indicative of constitutional and local excitement, we shall frequently be gratified by the emergence of the head, without the assistance of either the forceps or the perforator. These remarks are equally applicable when there is disproportion between the size of the head and the capacity of the pelvis ; ever remembering that the bones of the fœtal cranium may by compression very much overlap each other, and thus its bulk may be so far diminished as to bring it within the successful influence of the uterine powers.

We cannot better conclude this section of our subject than by quoting the words of Baudelocque, a name of high repute in obstetric science. "The accoucheur," says this author, "who has not yet by long practice enabled himself to form a just estimate of the processes of nature, may easily deceive himself in these cases, and in the first judge a delivery to be impossible which is ready to terminate, and in the second, declare that to be easy which is about to be opposed by difficulties, that art only can surmount ; or which at the least, render it extremely tedious and painful." More than forty persons were witnesses

to the disagreeable consequences of a mistake of this kind, in a woman whose pelvis he possessed. The operator having pronounced that the woman would be speedily delivered, on account of the facility with which the child's head had engaged with the first pains, and attributing the obstacles which soon after obstructed its passage to another cause, and not to the narrowness of the inferior strait, which had remained unnoticed, he waited two days in perfect security ; and then, by a more blind temerity than the former, used the crotchet on a child whose life might have been by other means preserved.

PART II.

COMPRISING MENSTRUATION, THE DESCRIPTION OF THE GRAVID UTERUS, WITH THE DOCTRINES OF CONCEPTION, STERILITY, AND THE SIGNS AND DISEASES OF PREGNANCY.

CHAP. I.

SECT. I.—*Of Menstruation.*

For a description of the external and internal generative organs, I refer the reader to some of the many treatises on Anatomy, and go on to notice the important function of Menstruation. We do not pretend to throw any new light on the causes of this periodical discharge, with which the health and comfort of the sex is so intimately associated; but we shall endeavour to place before our readers a clear narration of the various circumstances which

are found to belong to its healthy and morbid condition. We are not aware of any change which so much affects the whole course of female life as menstruation. Every process of the female economy to the time of puberty is incomplete and defective, if the catamenia do not appear ; and in after years, when the uterine functions are proceeding, their health and efficiency are most materially dependent on the regularity and natural character of this function : and it is equally known that, when women have passed the middle period of life, and have escaped the dangers incident to parturition, that they may be yet placed in jeopardy at its final cessation. We believe there is now little difference of opinion as to the nature of the menstrual fluid. That it is not blood seems sufficiently evident from its scarcely possessing one property in common with it, not excepting colour ; for even here there is not perfect agreement ; for while the colouring matter of the catamenia is permanent, that of the blood is not so. In the London Practice of Midwifery, it is stated that Mr. Brande analyzed the catamenial discharge, collected from a patient with prolapsus uteri, and which was conse-

quently free from admixture of other secretions. It had the properties of a very concentrated solution of the colouring matter of the blood in a diluted serum. It has been observed that artificial solutions of the colouring matter of the blood invariably exhibit a green tint, when viewed by transmitted light. This peculiarity is remarkably distinct in the menstruous discharge. No globules could be discovered in this fluid; and, although a very slight degree of putrefaction had commenced in it, yet the globules observed in the blood would not have been destroyed by so trifling a change. The menstrual fluid does not soon putrefy, even if exposed to summer heat, nor does it coagulate; and we particularly remember that Dr. Mansfield Clarke, in his lecture on this subject, exhibited a specimen of the menstrual discharge, which had remained in a fluid state for many years. Much more might be said on this point; but we conceive that we are fully justified from what has been already advanced, in defining the menstrual fluid to be a secretion from the uterine arteries, and perfectly different from the blood.

The age at which menstruation begins varies in different individuals, as well as in different climates. In this country its commencement may generally be dated from the fourteenth or fifteenth year, while in Persia the females advance to womanhood at nine or ten years old; but in Lapland, and the north, puberty does not arrive till the age of eighteen or twenty; and, according to some authors, menstruation in these very cold countries occurs only in the summer season. There is a great variety in the quantity of the discharge; for while in this country from four to six ounces are generally lost at each period, in the east, and in the Archipelago more especially, according to Hippocrates, eighteen or twenty ounces of this secretion are thrown forth from the uterus. The time during which women continue under the influence of this discharge is not regulated by any certain rule. The author attends two patients, one of whom invariably continues unwell eight or nine, and the other never more than two days, and yet they are both equally healthy. Writers do, however, agree in considering three or

four days as the average time. The commencement of menstruation is generally, though not invariably characterised by attendant indisposition. On enquiry, we find that there are uneasy sensations in the stomach and bowels, distressing feelings of languor and pain in the lumbar and pelvic regions, accompanied by anomalous and hysterical symptoms. It frequently happens that these affections are not immediately succeeded by the discharge; for in the majority of cases, the health is slightly impaired for two or three months. During one of these seasons of indisposition, when these ailments are perhaps more than usually severe, a serous discharge takes place from the vagina, at first only slightly red, and not becoming entirely sanguineous for several periods. The health continues frequently delicate till the full establishment of this new function; after which, if there be no suppression from exposure to cold or general illness, menstruation may continue to be performed for many years, without any other inconvenience than a slight pain in the back, or trifling hysterical complaints. Nor is this period of female life un-

attended by alterations, both in character and person, fully denoting that the age of puberty has arrived. The complexion of girls is improved, their countenance is more animated, the tone of their voice more harmonious, their mental powers are much stronger, and they have acquired dispositions and feelings of which they were previously unconscious. The uterus and the vagina are increased in size, the mons veneris is developed and covered with hair, the pelvis is augmented in capacity, and the glandular substance of the breasts, as well as the cellular membrane with which it is invested, is gradually unfolded. *Nec minus notum est, quanta virginea alteratio contingat, increscente primum et tepefacto utero; pubescit nempe; coloratio evadit, mammæ protuberant, pulchrior vultus renidet, splendent oculi, vox canora, incessus, gestus, sermo, omnia, decora fiunt.—Harv. Exercitat de partu.*

Although the catamenia are invariably suppressed in pregnancy, and generally during lactation, their appearance in the latter state is by no means an unfrequent occurrence. The cause of menstruation has greatly ex-

exercised the ingenuity of professional men. No part of the anatomical structure of the womb seems to favour the opinion that it may be attributed either to general or uterine ferment; nor are we at all more successful when we look for its cause in universal or local plethora. Were this the case, the quantity of menstrual fluid ought to be influenced by the abstraction of blood from the arm, before or during menstruation, which is not the fact. We were lately particularly impressed with the superior relief of pain afforded only by the commencement of the discharge, to that which we procured by the abstraction of blood in a patient, who was supposed to be suffering under peritonæal inflammation, and from whom under that impression sixteen ounces of blood were abstracted. She had long been the subject of dysmenorrhœa, and in twelve hours after the venesection, the catamenia began to flow, and the cessation of the pain, which was scarcely relieved by the bleeding, was remarkably manifest and decided. Further than this, women in whom no kind of plethora can by possibility be supposed to exist, who, in con-

sequence of dissipation, have impaired their appetites and diminished their strength, yet menstruate regularly. We believe it to be one of the instances in which the researches of able and intelligent men will terminate in their tracing to the will of the Creator; in other words, they will regard it as a law of nature, that the fleshy uterus of the human female, shall, once every month, by a secretory action, produce a certain sanguineous fluid, just as the liver secretes the bile and the kidney the urine. It is true there is the superadded peculiarity of the periodical return. This question will, however, admit of explication when the first part of secretion is understood. If there are some women to whom the catamenia are denied, and such instances are on authentic record, nature almost invariably attempts to remedy the misfortune by setting up some other evacuation, which in a measure supplies the place of the proper one, as far as concerns their health. In some we find a periodical discharge of blood from the nose, from the anus, from the puncta lachrymalia, from the ears, or the nipples, and Baudelocque knew a

woman of seven or eight and forty, who, from the age of fifteen, had been regularly attacked every month by a vomiting and purging, which lasted three or four days. She never had the catamenia.

Menstruation is generally supposed to serve the important purposes of maintaining the uterus in a fit state for conception, and during pregnancy of affording nourishment to the child. In the former of these opinions we concur, as we believe every fact in physiology demonstrates the impossibility of conception where menstruation from the uterus does not exist, although there may be vicarious discharges from other parts of the body. Thus far we proceed on certain grounds, and if we remain in doubt as to the precise kind of influence which menstruation exerts on the female system, as a whole, we have no hesitation in believing that it is absolutely essential for the healthy performance of the function of the uterus. The œstrum of animals, when they are salacious, may perhaps be regarded as equivalent to menstruation; and, although it is most frequently mucous, yet in very hot seasons and climates it has

been frequently observed to be sanguineous. The latter opinion, that menstruous blood during pregnancy serves for the nourishment of the fœtus, is not very satisfactory. We find all animals, whether menstruating or not, nourishing the embryo contained in their uteri ; and if the whole quantity of menstrual fluid which would have been secreted, supposing pregnancy had not occurred, were bestowed on the fœtus, we cannot suppose that it would contribute very materially to the building up of an ovum, whose weight at the birth is, on an average, from eight to ten pounds.

Women generally cease to menstruate in this country from the forty-fourth to the forty-eighth year ; the precise time a good deal depending upon the early or late appearance of the secretion. Thus when menstruation commences at ten, twelve, or thirteen years of age, it will frequently disappear at forty ; whereas if puberty, the consequence and not the cause of menstruation, has not been established till the sixteenth or eighteenth year, the catamenial discharge may continue till fifty-two or fifty-three, and even to a later

period. Women, however, seldom bear children in this country after forty-five or forty-six years of age; and thus the propagation of the species, and the active duties consequent thereon, are associated with the most vigorous periods of existence. "Had any other law prevailed, children might have become parents, and old women might have borne children when they were incapable of affording them proper nourishment."

It is worthy of remark that the usual cessation of the catamenia is frequently a critical time in female life. Tendencies to disease, and that of the organic kind, for years dormant, may now be excited into activity, and the uterus and mammæ demand watchful attention. The irregularity of the catamenia, and their obstruction for several months, sometimes induce or accompany swelling of the abdomen, sickness, and loathing of food. These symptoms resemble pregnancy; and there are some women, as La Motte remarks, who would rather persuade themselves that they are going to become mothers, than that they are growing old, and this persuasion they indulge; "*donec tandem spes omnis in flatum et pinguedinem facesseret.*"

Dr. Marshall Hall, whose Commentaries on some of the more important Diseases of Females we would especially recommend to all who are interested in this class of morbid affections, observes that the general "treatment, in regard to the final cessation of the catamenia, involves two points; the first, the restoration of the general health, if this be impaired, and especially the daily observation of the state of the bowels, and attention to air, diet, and exercise; and the second the promotion, by every gentle means, of the flow of the catamenia when they do appear." The head frequently requires attention, as sudden flushes, vertigo, and drowsiness, are common affections at this time; nor can we too forcibly enjoin regular evacuations from the bowels, and the occasional abstraction of blood, by cupping, from the back of the neck, not only during the exact period of the cessation of the discharge, but for some time afterwards. Sir Astley Cooper and Dr. Farre have mentioned a case, occurring at this period, in which both the uterus and the mamæ became scirrhus in the same subject. The period, says Dr. Hall, including several years before the disappearance of the catamenia,

the space occupied by this change, and several years afterwards, may with great propriety be termed the first climacteric period of female life.

SECT. II.—*Of diseased states of the catamenial secretion.*

It is the opinion of many, that women suffer more than men at their approach to puberty; and judging from what we see in this country, where girls are luxuriously educated, often living in warm rooms, and lying on soft beds, we incline to this opinion. We believe there is little dispute as to the greater liability of women to cancer than men, especially at the final termination of the catamenia. Notwithstanding these facts, we do think that certain advantages accrue to the sex from menstruation; more especially when evacuations are required for the relief of peculiar symptoms and conditions of the system, these are made with the utmost facility

through the medium of the catamenial discharge, and not as is too often the case in men, when an equivalent evacuation is necessary, with injury to the parts which furnish it. It cannot, however, be denied that the circumstances attendant on menstruation frequently demand medical relief.

Obstruction of the catamenia.—Authors have usually included two forms of disease under this denomination, that in which the catamenia do not appear at the period of life when they may naturally be expected, or *emansio mensium*; and that in which, having once appeared, they are suppressed, or *amenorrhœa*. It is right to remark that these terms are frequently indiscriminately employed, and for ourselves we do not see any real distinction between them. *Amenorrhœa* is a disease of such unbounded variety, and involving to so great an extent, if of long continuance, the health and energy of the system, as to preclude our entering fully into its details; we must content ourselves with observing, that it appears in some instances to be connected with debility of constitution, while in others it is associated with plethora and florid complexion. Both forms of the affection require

specific treatment, the first, by tonics, the best of which is the sulphate of iron; in the latter, or amenorrhœa, arising from fulness of circulation, the careful, and perhaps repeated abstraction of blood, persevering attention to the condition of the alimentary canal, and the observance of a spare diet, may soon induce the salutary flow of the menstrual discharge. In chlorosis, characterised by pallor and slight tumidity of the countenance, and by a general exangueous state of the system, the treatment is at first simple and quickly successful. But the disease may be so confirmed and inveterate, and so mixed up with the affection of different organs, as to render the case truly perplexing. We frequently find, in this form of the malady, that the legs and ancles swell at night, and that the face and eyelids are puffy and distended in the morning. The source of these appearances is œdema; and we know that the interstitial fluid lodged in the cellular substance of the face, subsides during the day, the erect posture being generally maintained, and that the cells below are gradually filled again towards night, producing swelling of the ancles. "It would be difficult," says Dr. Marshall Hall, "to trace

the series of causes and effects in the pathology of this affection ; but I do think the first cause is in the state of the bowels ; that a concurrent cause is the peculiarity of constitution already described ; and that an exciting cause is the inactive and sedentary mode of life usually obtaining in female youth. The stomach suffers from its continuity with the intestines, the uterus possibly by contiguous, the head and the heart by remote, sympathies ; the pain of the side is peculiar, and too common to be a mere accidental complication ; and it therefore probably also depends upon the state of the large intestines." In the last remark I fully concur, and with respect to chlorosis generally, I am persuaded that it will generally yield to the gentle yet effectual unloading of the large intestines, by some cordial aperient, following the measure by tonics or chalybeates.

To the symptoms already enumerated, we may subjoin those which arise from derangement of the stomach. Flatulence and capricious appetite are very distressing. The patient is annoyed by an uncontrollable desire for chalk, cinders, and other substances equally unnatural. The bowels are irre-

gular, sometimes much confined, and at others in a state of diarrhœa. The breathing is hurried, performed with great difficulty on the slightest exertion, and there is often palpitation of the heart. The treatment of chlorosis was formerly conducted upon what may be termed the empirical plan. Specific medicines, called emmenagogues, supposed to exert an immediate influence on the uterus, in compelling it to secrete the catamenial fluid, were given; and very frequently with little success. Blood-letting can seldom be required in these cases; and we allude to it, as we have lately witnessed its bad effects. A chlorotic patient was bled from the arm by her medical attendant for the relief of difficult respiration, and was partially, of course not fully, relieved. It was thought advisable to repeat the bleeding, which was again followed by temporary relief; after this period I visited her, and nothing could be more conspicuous than the bad effects of this mode of treatment. Her prostration of strength was extreme; the breathing was more laborious, and an anasarous state of the body was universally apparent. It is needless to remark, that many months elapsed before an opposite plan of

treatment was successful in the restoration of the health; and we are sure that events, similar to the one now related, have not unfrequently arisen from the too lavish use of purgatives.

We believe that venesection will generally aggravate the evils of this condition; for, while it affords only temporary relief, it will permanently augment the weakness, and the disposition to dropsy. Remedies of the tonic kind, although they may not directly induce the flow of the catamenia, will certainly, where there is pallor of the countenance, with the other indications of debility, facilitate the desired result. Previously to their use, some mild aperient, and perhaps a gentle emetic, should be administered. We prefer the preparations of iron to any other remedies of this class, and we have seldom experienced any decided difficulty in their exhibition. Either the sulphate or the carbonate may be employed. The diet should be generous, and wine and water may be allowed. Exercise is very important; and dancing, riding on horseback, or swinging, and country air, will exert a most beneficial influence. The chalybeate waters of our own country will be found

a useful auxiliary to other means ; and tepid bathing or pediluvia, as well as bathing in the sea, will be of use. Dr. Denman observes, that the guides to the ladies contrive to go into the water during the time of menstruation, without any inconvenience. We must remember, in the exhibition of medicine for the removal of suppression of the catamenia, that there are peculiarities in the constitution of some women, which prevent the good effects of the most approved remedies. Here we are not to be discouraged, but we must call into action other means even if of less general efficacy. All the remedies denominated emmenagogues, possess a stimulating property, and their employment is of doubtful tendency where there is exhaustion, or much debility; if the patient, on the contrary, be plethoric, they are not without danger; for, failing to produce the uterine discharge, they may originate hæmorrhage in some other organ or part. Dr. Home has eulogised the powers of madder root, as a deobstruent in one or two large doses, immediately before the expected period, or in doses of half a drachm twice or three times a day during the interval. Friction of the lower extremities,

and electricity, may be strongly recommended. As a local stimulant, and not liable to the objections already urged against constitutional remedies of a similar kind, we must not fail to mention the *ammoniacal injection*. We have used it many times; and in one or two instances, when the amenorrhœa was of several years standing, we have witnessed its decidedly good effects. It may be employed by adding a drachm and half or two drachms of the liquor ammoniæ pur. to twelve or sixteen ounces of warm milk, and throwing up six or eight table spoonfuls into the vagina four or five times daily.

SECT. III.—*Of menorrhagia, or profuse menstruation.*

This condition of the menstrual secretion is exactly the reverse of amenorrhœa; and if it has existed long, or to any considerable extent, the symptoms are similar to those which are produced by hæmorrhages of any

other kind, only excepting the peculiar uterine circumstances with which they are associated. Authors generally describe two kinds of menorrhagia: that in which, by the frequency of return of the catamenia, a debilitating drain is set up; and that in which the period is not more frequent than natural, but when the quantity of blood lost at each time (for in excessive flow of the catamenia or menorrhagia, the secretion is apt to assume the character of blood) is greater than is compatible with the strength of the patient. We believe this disease, in a majority of cases, arises from the hæmorrhages which accompany early abortions, or that it is symptomatic of some affection of the uterus itself. It may consist with very different states of constitutional power and may occur in those who are plethoric, robust, and vigorous, or where there is weakness and partial emaciation. In the one case, the undue discharge occurs in consequence of distension or over action, in the other, from debility. To whatever extent menorrhagia may proceed, it is invariably accompanied by indications of uterine irritation; such as pain in the back and loins, and about the pelvis, nor do the uncomfortable symp-

toms stop here: if there be frequent returns of the hæmorrhage, the general health suffers, the loss of strength is very manifest, dyspepsia harasses the patient, leucorrhœa occurs in the intervals, and the foundation is laid of visceral disease, and eventually of dropsy.

Burns says that the causes giving rise to menorrhagia may be divided into those which occasion the two predisposing states of plethora and weakness of the vascular system, and those which act more immediately on the vessels of the uterus. Of the first kind, may be mentioned those which on the one hand increase the quantity of blood, as rich diet, indolence, &c.; and, on the other, debilitate the body, as fatigue, abstinence, and profuse discharges. Amongst the exciting causes, or those more particularly affecting the uterine vessels, may be mentioned the excitement produced by constipation, or dyspepsia, and that morbid condition of the womb occasioned by abortion, or laborious parturition. Married women are most liable to menorrhagia; frequent parturition or undue lactation being a powerfully predisposing cause. We are now in attendance on a lady who, in op-

position to advice, has persevered in nursing fifteen months with health gradually declining; for the last half year she has regularly and rather excessively menstruated; but it was not till the weaning was fully accomplished, that any profuse hæmorrhage occurred; immediately on the completion of this process, the uterine vessels, weakened by the drain of long continued lactation, poured forth a large quantity of blood. A repetition of this hæmorrhage has prostrated her little remaining strength, and months will be required to restore her health. Dr. Dewees mentions the case of a lady, with whom he is well acquainted, and who is now forty years of age, who since the appearance of the catamenial discharge, has never enjoyed a longer exemption from it than ten or twelve days, unless she was pregnant or suckling. Yet, during the whole of this time, she has never suffered the slightest indisposition that could be attributed to this cause.

The treatment must of course vary with the degree, and the longer or shorter continuance of the disease. The recumbent position, abstinence from stimuli and every kind of exertion, and, perhaps, in the very commence-

ment, moderate venesection, will suffice for the removal of menorrhagia, where it is slight and connected with only an occasional feverishness of system. We must prohibit the use of animal food, and preserve an aperient, not a purged state of the bowels, by the infusion of roses and the sulphate of magnesia. These measures will generally suffice for the removal of the simplest kind of menorrhagia ; but when it is more severe we must resort to local measures, as the application of cold to the pudenda and loins, and, if necessary, the injection of styptic and astringent lotions into the vagina. There are cases, not of very unfrequent occurrence, in which astringent injections, and even cold water, cannot be borne, as they not only produce uncomfortable and painful sensations, and occasionally inflammation of the vagina and uterus, but manifestly increase the discharge. Here we must trust almost entirely to constitutional measures. Digitalis, in an excited state of the circulation, has been productive of great good ; but the propriety of not lowering the patient, beyond the point absolutely required for the restraining of the hemorrhage, will be apparent to all. We might enter more at length

into the treatment of excessive and consequently highly dangerous cases of menorrhagia; but as some authors think that instances of this latter kind, in which the blood poured out coagulates, ought to be regarded as hæmorrhages from the uterus, rather than menorrhagia; and, as we intend fully to describe the treatment to be observed in uterine hæmorrhage, we shall refer our readers to that part of this treatise for the desired information; and shall conclude the remarks on profuse menstruation by a review of the measures to be adopted, in the intervals of the menstrual periods, to prevent the return of the disease. To effect this purpose a mild and nutritious diet, country or rather the sea air, chalybeate water, and the injection of astringent washes into the vagina, will do much. In addition, all painful exertion, or rather every degree of exercise which exceeds the limits of comfort, by inducing fatigue, should be avoided. We must however bear in mind that in cases where the weakness giving rise to menorrhagia is local, not constitutional, we incur some degree of hazard by the employment of general tonic measures, as we are told that by these means

we increase the strength of both parts at the same time. We confess we are not very fearful on this point, if due care be displayed in the treatment of the local debility : let cold astringent injections be perseveringly thrown into the vagina, at the same time allowing the general health every opportunity to recruit, and we feel assured that greater benefit will be obtained than if we had carried forward the treatment by a preponderance in favour of local, to the disregard of constitutional remedies.

It is scarcely necessary to remark that long continued menorrhagic discharge gives rise to very complicated affections of the general health, in which almost every organ seems to suffer. Here we may exhibit, having previously regulated the state of the bowels, the sulphate of iron, or the sulphate of quinine, in small repeated doses.

SECT. IV.—*Dysmenorrhœa, or painful menstruation.*

This disease is not of very unfrequent occurrence, especially in cities and large towns, where dissipated and irregular habits so generally prevail. If menstruation be painful it is generally very sparing, at least for the first two or three days, till by the influence of remedies the cause of obstruction is removed. It is most probably dependent on an imperfect or partially established catamenial action; an opinion supported by the beneficial results of mild emmenagogues; and by a knowledge of the way in which the discharge comes on. The approach to the period is characterised by continued and severe pain in the lumbar, dorsal, and pelvic regions, which is tardily followed by a very slight flow of the secretion; this, as we have just now observed, continues imperfectly for the first few days, and, as the discharge in-

creases in quantity, the pain becomes less severe, till at last it is scarcely regarded. We attended a lady three years ago, in dysmenorrhœa, where there was superadded to the disease the most violent spasms of the intestines we ever recollect to have seen ; it was not uncommon for her to remain delirious for some hours from the violence of the pain. Opium, sinapisms, and the warm bath, gave slight and temporary relief ; but it was not till the employment of the ammoniacal injection with opium, continued through many periods, that she was permanently improved. This patient resides in the West of England, and we have lately heard that her menstruation is performed with very trifling pain, and so abundant in quantity as to free her from congestion about the head, formerly one of her most distressing symptoms. The remedies we have now mentioned are to be resorted to during the attack, and the opium is particularly beneficial, if combined with ipecacuanha, and given in such doses, in tepid diluents, as to produce perspiration. The interference with the general health must be treated on general principles, ever

taking care to prevent any accumulation in the alimentary canal, by the judicious exhibition of laxatives.

All the common circumstances, Dr. Denman observes, attending menstruation, have been well and fully described by various authors ; but having very often observed a substance expelled with the menstrual discharge, which has hitherto escaped notice, and apprehending that the knowledge of this substance might be of use in practice, he felt it incumbent to describe it. " In the examination of the catamenial discharge, for the purpose of investigating the state of the uterus, and the discovery of some complaints thereon depending, a membranous substance was often shown me, which was usually considered as the token of an early conception, or as the casual form of coagulated blood. But, on examining this substance with more attention, I constantly found that one surface had a flocky appearance, and the other a smooth one ; that it had in all respects the resemblance of that membrane which Ruysch had called the villous, of the formation of which Harvey had given a very curious description, and which the late Dr. Hunter de-

scribed with his usual precision, and called the decidua. To put the matter out of doubt, several years ago I requested the favour of Dr. Baillie to examine some portions of this membrane, and he agreed with me in thinking it an organised membrane, similar in structure to the decidua. As the first cases in which this membrane was discharged were those of women who were married, a doubt arose in my mind whether it was not really a consequence of early conception; but I have lately had the most undoubted proofs that it is sometimes discharged by unmarried women, and may be found previously to and without connubial communication; and that the uterus has occasionally, or constantly in some women, the property of forming it, at, or in the interval between the periods of the menstrual discharges. It seems particularly necessary to establish this fact, as the appearance of the membrane has more than once given rise to erroneous opinions and unjust aspersions. Nor is this the only circumstance in which some women, at each period of menstruation, have symptoms like those which accompany pregnancy or parturition. In every case, in which this membrane has

been discharged, the women have menstruated with pain, and the discharge has flowed slowly, and apparently with difficulty, till the membrane has come away, which in some cases has been in small flakes, and in others in pieces equal to the extent of half the cavity of the uterus, or more, of which they retain the shape. I suspect, but my experience does not enable me to decide, that this membrane is expelled in every case of habitually painful menstruation."

Dr. Denman supposes that no woman can conceive who is affected with this disease; but some cases, says Mr. Burns, and amongst others that related by Morgagni, are against this opinion. *Mercury*, bark, chalybeates, myrrh, and injections, have all been tried without much effect. Time in general removes the disease better than medicine, which is only to be advised for the relief of pain, weakness, or any other symptom which may attend or succeed to this state.

CHAP. II.

SECT. I.—*Of the Gravid Uterus.*

In the description of the gravid uterus, we comprise the changes induced in its own structure and that of its appendages by impregnation, the various uterine products of conception, the doctrine of conception itself, and the diseases of pregnancy, together with its earlier and later signs. Here we shall pursue the same course as in the former part of this treatise, disencumbering the subject as much as possible of all irrelevant and unimportant details, and concentrating the attention of our readers on those facts and symptoms which are independent of controversy, and which lead to useful results in practice.

It is scarcely necessary to observe, that the whole genital system of the female undergoes most important changes from impregnation ;

and, in treating of the gravid womb, we shall principally dwell on the alteration in its size, figure, and situation, on the surprising development of its structure, and on the action with which it becomes invested. The uterus, in its gravid state, contains the ovum, which consists of the foetus and its appendages, viz. the placenta, the funis umbilicalis, the liquor amnii, and the membranes. It will hence be apparent, on the slightest reflection, that the properties of this viscus, at the close of pregnancy, must differ very widely from those by which it is characterised at its commencement, or during its unimpregnated condition. Its size and weight are conspicuously increased ; so that the uterus, which before pregnancy attracted no notice from its size, and produced no unpleasant effects from its weight, is now most prominent from its increased volume, and is giving rise to troublesome affections solely by its augmented gravidity. Its enlargement is more apparent in the latter than in the earlier months of pregnancy ; although this remark is true only with regard to its absolute increase, as in the first month after conception it probably doubles its natural size. It

does not go on in this ratio, not being twice as large in the ninth as it is in the eighth month. The uterus increases in all its parts during pregnancy, but as the increase is not in the same proportions in every part, an alteration of shape is the necessary result. The uterus increases much more in length during the early months, and in breadth and rotundity towards the close of gestation.

The position of the uterus is much changed during pregnancy ; and it is of great moment to be well informed on this point, as we may be called upon to distinguish between pregnancy and ascites, schirrous or dropsical ovaria, or any other abdominal intumescence ; and the right surgical operations for the relief of these morbid conditions will depend on the correctness of our diagnosis. It is not necessary here to enumerate the various marks on a knowledge of which will depend the truth of our opinion. We may, however, remark, that the os uteri, towards the close of pregnancy, is situated inferiorly and posteriorly, pointing towards the middle of the sacrum ; the fundus is anteriorly beyond the point of the ensiform cartilage ; having above, posteriorly, and at its sides the intestines, and

below and in front the bladder, when distended. The ascent of the uterus is never directly upwards, but generally inclining a little to one or the other side, and, according to Hamilton, most commonly to the right. Three causes may be adduced as giving rise to conspicuous deviations in the position of the uterus. The relaxed condition of the abdominal parietes, generally if not always increased by child-bearing; the unusual prominence of the lumbar curve, by which the womb is thrown unnaturally forward, and deformity of the pelvis. The accoucheurs of the last century, and especially Deventer, erroneously ascribed to the relaxed condition of the abdominal parietes, the obliquities, as he termed them, of the uterus, to which he imputed the interruption of labour; overlooking the two last-mentioned causes, to which he might with propriety have attributed most of the obstacles to parturition. While the uterus is thus altered in its figure, position, and volume, by pregnancy, it does not suffer less change in its composition and development. " Its fibres not only unfold and lengthen during this state, but they become soft, red, and spongy, till at length we

recognise in them all the appearances of muscular organisation." Blumenbach, and some of the continental anatomists, have denied the muscularity of the uterus, principally from their not being able to discover such structure in its unimpregnated state. We cannot concur in such an opinion. In the mammalia generally the womb is indisputably muscular; and, in the womb of the rabbit, there are two distinct sets of fibres, annular internally, and longitudinal without, the action of which, in a rabbit whose abdomen was opened at the close of pregnancy, we have seen more distinctly than the peristaltic action of the intestines. In the impregnated uterus the muscularity of its structure is obvious, as many preparations in our various museums will testify.* Like other structures of the same kind, it is acted on by specific stimuli, the ergot, the distension produced by the child at the full period, the presence of the placenta, and by the accidental remaining behind of a clot of coagulated blood. Allowing these facts their full weight, it is, to say the least of it, opposed to the

* See four preparations in Dr. Blundell's museum at Guy's Hospital.

simplicity of nature, so apparent in all her operations, to deny the muscularity of the human uterus, especially when strengthened, as we have already observed, by the established knowledge of its irritability and power of contraction. Anatomists are not agreed as to the regularity of the course of these fibres. Ruysch, and Dr. Hunter in his splendid work on the Gravid Womb, describe them as the transverse in the body of the uterus, but forming at the fundus concentric circles around the fallopian tubes.

The ligaments of the uterus, the ovaria, and the fallopian tubes, are not, towards the close of gestation, situated as formerly, loose in the pelvis ; for the duplicatures of the broad ligament, in which they are contained, are now spread over the womb ; and these parts necessarily in advance of the uterus, are confined by the stretched peritonæum. In the performance of any operation on the womb this fact should be remembered. The blood-vessels are much enlarged during pregnancy, especially in the part occupied by the placenta, where some of them are dilated in a surprising degree. The capacity of the veins is so much increased that they have some-

times received the name of sinuses, and, in the part occupied by the placenta, many of them are large enough to receive a goose's quill. Nor is it these vessels alone which are so developed; the lymphatics are much more so when we consider their original diameters. Cruikshank says they become as large as quills, and are so numerous in the latter periods as almost to induce the belief that the uterus is nothing but a composition of these vessels. The nerves participate in this increase of development; and, when we consider the numerous sources of their origin, we cannot wonder at the sympathy of so many parts with the uterus, or at the variety of symptoms produced by the diseases which affect it.

There has been much controversy about the increase of thickness in the gravid uterus; some affirming that its thickness was greatly augmented, while others have strenuously denied the fact, and have stated that it is even thinner than in its unimpregnated condition. If its parietes do not preserve all their natural thickness, while it is acquiring a larger capacity, at least they lose so little of it that many have thought it remains the same in all pe-

riods. We are not aware of any facts which enable us to speak with absolute certainty on this point; as there are, in the obstetric museum at Guy's Hospital, four preparations of the pregnant womb which demonstrate its thickness and thinness in an extraordinary degree. A professional friend mentioned to me the following singular and interesting case:—A lady of delicate fibre who had borne several children, slipped off the pavement, but did not fall, in the last month of pregnancy. Acute pain was immediately felt in the uterine region, and when examined by a very experienced surgeon, so plainly were all the parts of the foetus felt through the abdominal coverings that he did not hesitate to believe that the uterus was lacerated, and that the child had passed into the abdominal cavity. In a few days, however, she was safely delivered “per vias naturales” of a healthy child, thus plainly shewing, in this instance, the extreme tenuity of the uterine parietes.

Denman says that, if the uterus be healthy, it retains its original thickness through the whole period, to whatever degree it may be distended. He also considers this thickness the medium of its strength, by which it is capable of exerting

infinitely greater power for the expulsion of its contents than the uterus of any animal. If the womb be increased in thickness there is no practical deduction of importance connected with it ; if, on the contrary, it be extraordinarily attenuated, it is evident that especial caution should be employed in the performance of any manual or instrumental operation within its cavity ; as rupture and laceration are accidents of not very rare occurrence. The place where the placenta is attached is that where the thickness of the parietes is most considerable, and the vicinity of the orifice is the thinnest part. To judge as correctly as possible on this point, our examination should be made when the uterus is in its state of greatest dilatation, or before the waters have passed off, for the thickness will of course increase in proportion to the diminution of its contents.

Little need now be said as to the nature of the uterine enlargement ; that it is not owing to mere mechanical distension, is, we conceive, sufficiently proved by what we have already advanced : we must attribute it to the gradual and increasing development of all the structures entering into the composi-

tion of the womb, and also to the very large quantity of blood which is circulating through its vessels. Whether it is accompanied by real growth and by the accretion of cellular substance, seems very doubtful. My friend, Dr. Ramsbotham, sen. upon this subject, says, "that there is no actual deposition of new animal matter within the uterine structure during pregnancy, appears evident in the established fact, that the uterus, by a process of silent and gradual contraction, continued for some time after the expulsion of its contents, can and does possess the power of daily diminishing its volume, until it has acquired its smallest unimpregnated size, when it is again able to resume its original and peculiar functions. But if the parietes of the gravid uterus be supposed to owe their size to bulk, acquired by the deposition of new animal matter, by what natural means is that matter so suddenly removed? Can the effects of absorption be thought equal to it? We see no such rapid diminution of size from the powers of the absorbent system under diseased structure. Contraction alone explains it."

The follicular apparatus about the neck of the womb, as it serves the important purpose of protection to the membranes from any foreign body, is deserving of notice. During the whole period of gestation these glandular follicles secrete a viscid gelatinous fluid, closing the mouth of the uterus, and rendering it impervious after conception. It is from this source that the glairy fluid, at the commencement of labour, denominated show, is principally furnished.

Thus pregnancy is not only giving rise to changes in every part of the original structure of the uterus, which become more apparent as gestation draws towards a close, but at the time of labour we find a new principle superadded, for the purpose of putting a termination to the further ascent and enlargement of this viscus. It is this principle which gives a disposition to the uterus to act upon, and to expel whatever is contained in its cavity; and, if any further proof were required of its muscularity, the way by which it thus disposes of its contents would abundantly furnish such testimony. This action has been considered as of two kinds; tonic action, which is equal and constant; and

spasmodic contraction, which is sudden and transitory, and is that species of power which is called into exercise by the exigencies of parturition. Perhaps the more correct statement is that which represents both these species of action as the same in their nature, differing only in their degree; this difference being produced by the large volume of contents upon which the womb has to act, and which opposes such various degrees of difficulty and resistance to the completion of its purposes, as to render necessary such contractile efforts as must be attended by spasmodic and painful sensations.

Various opinions have been entertained by physiologists as to the precise nature of the uterine action, but we are not aware of their having arrived at any satisfactory result. The original cause may exist in its structure, form, or properties, or perhaps in some inexplicable impression produced on the uterus by the child. The circumstances of the constitution, as its strength and disposition to act, and more especially the blood, appear to exert an important influence as to the manner in which the effects of uterine action are produced.

The prevailing opinion is that which we have already stated, that the action of the muscular fibres of the uterus very nearly resembles that of other parts, and that the pain peculiarly attendant on its exercise arises principally, if not solely, from the obstacles it has to surmount, and which are inseparably connected with human parturition. Amongst the most conspicuous of these obstacles may be enumerated spasm, the firmness of the os uteri, and the resistance of the perinæum and vagina. Having now presented a brief, but perhaps a sufficiently explicit view of the womb and its contents generally, at the termination of pregnancy, we pass on to notice, in the same manner, the principal circumstances connected with the expulsion of these contents. Immediately after the rupture of the membranes, and the escape of the waters, a new action is commencing in the womb, and the very reverse of that power which during the period of gestation has been incessantly employed in building up the uterine structure, is now called into exercise to carry back the uterus, as far and as quickly as is consistent with the uniform perfection of nature's operations

to its original unimpregnated condition. The same contractile effort which ruptured the membranes, having acquired fresh force by the removal thus far of the obstacles which opposed its exercise, acts with increased power upon the remaining portion of the uterine contents, and soon completes the work of their entire expulsion. It is natural to suppose, that after such extraordinary efforts the whole system, but more especially the uterus, remains for some little time inactive ; this condition, if the labour has been favourable, is but of short duration ; and on examination of the uterine region, very soon after entire delivery, we are surprised at the collapse which the uterus has undergone ; for instead of a womb considerably larger than the adult head, occupying the greater part of the abdominal region, we find a hard, round, firm body, scarcely larger than the foetal cranium, occupying a situation a little above the ossa pubis. This, although the most prominent and desirable event, and that which is most frequently occurring after a well managed labour, is not the only one which demands our strict and watchful attention. The vagina, whose parietes have been greatly distended by the

passage of the child, is longer in recovering so much of its original dimensions as places it beyond the reach of any untoward accident. Its laxity is such as to admit very easily of inversion, more especially, if any injudicious attempts have been made to extract the placenta, by pulling at the funis. Inversion of the uterus may be produced by the same cause, and, whenever any degree either of instrumental or manual force has been employed in the labour, it is highly important that we should satisfactorily assure ourselves that there is no injury. This is best effected by placing the hand above the symphysis pubis, not removing it till we have grasped and distinctly felt the uterus.

Another method may be practised with extreme caution, which consists in passing two or three fingers into the vagina ; when, if there be any great degree of inversion, either of the vagina or uterus, it will easily be ascertained. We would here deprecate the indiscriminate practice of thrusting the whole hand into the uterus, on slight occasions, as replete with danger of the worst kind ; nothing justifies the introduction of the hand, excepting cases of hazard and

difficulty. It will be sufficiently evident, after what has been stated, of the great developement of all the structures of the uterus, that, even where nature's intentions with regard to its contraction shall have been fully answered, its blood-vessels must necessarily remain for some time of large capacity. Those which during pregnancy have been shooting from the uterus into the placenta, are, as we have already said, of very large size, and it is only by the contraction of the muscular fibre of the uterus around them, which ties them up, as by a ligature, that they are rendered secure. Hence the increasingly great importance of procuring this contracted state of uterus, which is without doubt the only permanent safeguard against hæmorrhage. External pressure, carried to the extent of gripping the uterus, with the administration of cold, either externally or internally, or both, are amongst the most efficient measures. We need scarcely add that any circumstance calculated to give impulse to the circulation, whether of a mental or physical kind, ought most sedulously to be avoided.

The next object of our enquiry will be the womb during gestation ; and here we shall dwell a little more in detail on those circumstances which by their gradual developement have produced the results already described. Though " we do not perceive very clearly what passes in the uterus at the instant of conception," and although we are not very sensible of its enlargement in the first months of pregnancy, it may be assumed, as a fact beyond all controversy, that the womb does possess this principle of gradual increase ; and so large does it become, in the latter periods, that our greatest difficulty is in conceiving how its vast augmentation of size has been accomplished. For the first two or three months the uterus suffers little alteration in its shape, its cavity remaining, as before impregnation, pretty much of a triangular figure. Its weight, however, is increased after conception ; and one of the first effects produced is its subsidence rather lower into the vagina, the shortness of which has been considered one of the equivocal signs of pregnancy. The uterus, thus confined within the bony cavity of the pelvis,

has a natural tendency from its increasing bulk to gravitate downwards, which satisfactorily accounts for many of the distressing and troublesome symptoms of this period. The fundus uteri is the part first distended; and, notwithstanding the increased weight, after a certain time begins to ascend. About the fourth month the uterus may be felt above the brim, by applying the hand to the hypogastric region. In the fifth, it is midway between the pubes and navel; in the sixth, it is a little below, and in the seventh, a little above the navel. In the eighth, it is half way between the scrobiculus cordis and umbilicus; at the ninth, it has reached the ensiform cartilage or scrobiculus cordis; and, at the commencement of labour, it is frequently not much higher than during the seventh month. In the second month, the uterus is enlarged in every part, without much change of shape; at the end of the third month, it generally measures from the mouth to the fundus above five inches, one of which belongs to the cervix; in the fourth, it measures five inches from the fundus to the beginning of the neck; in the fifth, about six inches from the cervix to the

fundus. In two months more, it measures eight inches ; and in the ninth month it generally measures ten or twelve inches, and is oviform in its shape.

In the fifth month, the cervix uteri begins to stretch, and one quarter of its length has become distended. In another month, one half of the cervix suffers this change ; and in the eighth, the neck is completely effaced, and its orifice is as high as the brim of the pelvis. The changes of the os uteri are principally effected during the ninth month, when its lips shorten, and sometimes disappear, although more generally they continue to project a little until labour commences. The mucous follicles become more developed, and they pour out a fluid which serves the purpose of lubricating the parts, and frequently it gives the first indication of labour.

SECT. II. — *Umbilical Cord.*

The *umbilical cord* is the channel of communication between the mother and the child, and passes from the abdomen of the latter to the placenta, into which it is generally inserted about one-third from its edge. It consists of two arteries, continuations of the arteriæ hypogastricæ, and one vein, protected by a membranous coat, the space between the vessels being filled up by a glutinous secretion. It is worthy of remark that neither absorbents nor nerves enter into the composition either of the funis or placenta, and that the funis under various modifications is found not only in oviparous and viviparous animals, but also in plants. The course of the vessels is not always straight; they run sometimes in a spiral direction, the arteries coiling round the vein, both chorion and amnion entering into the composition of the sheath, “the chorion adhering firmly to the cord every where, but the amnion not

adhering to the chorion ; it is not even in contact with it at the placental extremity, but forms there a slight expansion, which from its shape has been called by Albinus the *processus infundibuliformis*." *Burns*, p. 143.

For some weeks after conception, if the embryo be examined, no trace of the umbilical cord can be perceived, the abdomen of the child firmly adhering to that which afterwards becomes the placenta. This bond of union, by its subsequent extension, is converted into the *funis umbilicalis*, the length and thickness of which are not always in proportion to the size of the fœtus. The length of the cord varies greatly, in some cases it is double the length it is in others ; and, in a twin labour we once attended, it was so preternaturally short as scarcely to allow sufficient space for the application of the ligatures. Its average length is two feet, although the range of variation is from six inches to four feet. The *funis* is sometimes knotted, and in one case we counted five distinct knots, but there was no diminution in the size or vital powers of the child. The varicose state of these vessels is said to interfere with the circulation and growth

of the child, and even to destroy it: we have, however, frequently met with it, entirely unaccompanied by these circumstances. Sometimes, by the rupture of the vessels, blood is poured into the uterus, exciting pain and a sense of distension, which is only known when the membranes are ruptured and the coagula discharged. If the foetal and maternal portions should communicate, the mother is weakened and may even faint, and in every instance the child suffers, but does not always die. *Vide Baudelocque l' Art*, note to section 1084.

In a case which occurred to us some time since, where the cord was very much twisted round the neck, body, and thighs of the child, we divided it in preference to any attempt at untwisting. The latter measure we feel convinced, had it been ever so carefully performed, would have ruptured the funis. The shoulders of the child had here been delayed twenty minutes after the expulsion of the head, and we are persuaded the birth could not have occurred, unless the placenta had accompanied or immediately followed the child; or that such pressure, prior to its expulsion, would have been made on the cord as to have

destroyed its life, if the funis had not been divided; of course the foetal portion of the funis was instantly secured by ligature, and the shoulders were soon in the world. Burns, in a quotation from M. Anel, says the cord may, by a fall or violent concussion of the body, be torn at a very early period of gestation. In this case the child dies, but is not always immediately expelled. It may be retained for several weeks; afterwards the ovum is thrown off, like a confused mass, enclosing a foetus, corresponding in size to the period when the accident happened. The cord may be filled with hydatids. Mauriceau proposed, where the cord was unusually thick, that two ligatures instead of one should be applied on the portion which remains attached to the child, as it may so happen, that by the shrinking of the cord a fatal hæmorrhage may ensue.

SECT. III.—*The Placenta.*

There can be no doubt, notwithstanding our ignorance of the precise manner in which the functions of the placenta are performed, that it exerts a most important influence on the vitality of the foetus. Changes, analagous in some degree to respiration, are required by the foetal blood, and these it receives by its circulation through the placenta; and, although we cannot trace the connexion between the maternal and foetal portions, yet we know, if the placenta be injured by the rupture of the vessels passing between its inner surface and the womb, the child being deprived of its proper blood would perish, while the mother might experience no very serious injury. The human placenta is a circular flat body, about six inches in diameter, and one in thickness. In quibusdam placenta reperitur crassior, amplior, et sanguine abundantior.—*Harvey.* The centre is generally its thickest part, from which to its circumference it is gra-

dually attenuated, so as to lose itself in the involucra or membranes.

The shape of the placenta varies, being sometimes oblong, and at others curiously lobulated ; and we lately met with an example of the termination of the umbilical cord in the membranes at a very short distance from the placenta. The human placenta appears to consist of blood vessels and a cellular web (*placentæ substantia non constat glandulis sed mire vasculosa est—Ruysch,*) but possessing neither absorbents nor nerves. Dr. Haighton used to consider it as made up of three systems ; the maternal or cellular, in which the arteries terminate, and the veins commence ; the foetal or vascular ; and the intermediate, consisting of pulpy or cellular substance, and in which, if they exist, are to be found the communicating vessels between the maternal and foetal portions. If we throw ever so fine an injection into the umbilical arteries of the foetus, we shall thereby distend a considerable part of the placenta, but we shall find that the vessels of the maternal portion receive no part of the injection. On the contrary, if we inject from the uterine arteries, we shall again distend the placenta, but we shall find the

umbilical vessels and their ramifications perfectly uninfluenced. Hence we may infer the separation of the two portions of this viscus. It is also admitted that the blood of the fœtus, with regard to its formation, increase, and circulation, is totally unconnected with, and independent of the parent, except that the matter by which the blood of the fœtus is formed must be derived from the parent. Abundè me demonstraturum arbitror, viviparorum quoque fœtum, dum adhuc in utero continetur, non matris sanguine nutriti spirituque ejus vegetari, sed animo viribusque suis frui, ut pullus in ovo solet proprioque sanguine guadene.—*Harv. Exercitat. xxxiv.*

Thus in all probability, analogous to the adult circulation through the lungs, the blood fitted for the foetal circulation, is deposited by the uterine arteries, in minute vessels or cells, situated in the intermediate portion of the placenta, where the ramifications of the umbilical vein, either by a secretory process or by absorption of some of its finer parts, take up that which is necessary to the nourishment of the fœtus, and convey it along the funis to its ultimate destination. In like manner, when the circulating fluid of the fœtus requires any

change, it is brought by the umbilical arteries of the funis, to the cells of the placenta, whence the placental veins return it to the general circulation of the parent. From all this it appears, that Harvey was not far from the truth, when he promulgated the opinion of the placenta performing the office of a gland, and secreting from the blood brought by the maternal arteries, that which is necessary for the nourishment of the fœtus, much after the manner of the breasts and the liver. Ego itaque placentæ et caruncularum tale munus existimo, quali hepatis atque mammis vulgo tribuitur: hepar nempe chylum ex intestinis haustum corpori alendo ulterius præparat: et placentæ similiter succum alibilem à matre proveniente nutriendo fœtui porro concoquit. — *Harvey de Placentâ.*

SECT. IV.—*The membranes.*

Great diversity of opinion has obtained in relation to the number and structure of the membranes, which, together with the placenta, contain the foetus, the navel string, and the liquor amnii. This has principally arisen from the different periods of gestation when they were examined; and from the confusion of terms and the variety of descriptions which have been annexed to them. It does not appear very important, for practical purposes, to enter into a lengthened examination of the time when the membranes become consolidated or adherent one to the other; and we shall, therefore, describe them as they are found in the latter months of pregnancy; consisting of the amnion, and true chorion, and the decidua or spongy chorion; which last is furnished entirely by the uterus, and serves for its connexion with the vessels of the foetus.

The ovum, says Mr. Burns, when it descends into the uterus, consists of two mem-

branes, one within the other, having very transparent jelly interposed between them; but in process of time the innermost, which is called the amnion, grows so much faster than the outermost, called the chorion, that it comes in contact with it, or at least has only a thin layer of jelly interposed. The amnion is transparent, and thinner than either of the two other membranes, although, at the termination of pregnancy, it is stronger than either; it adheres to the internal surface of the chorion and placenta, and being reflected over the funis, it terminates at the umbilicus.

The decidua, as we have already observed, is provided entirely by the uterus; it is not a covering of the fœtus, but the lining of the womb, falling off after the delivery, and generally discharged with the lochia. Ruysch remarks that these membranes, in the advanced state of pregnancy, cohere slightly to each other; though, in some ova, there is a considerable quantity of fluid collected between them, which, being discharged when one of the outer membranes is broken, forms one of the circumstances which have been distinguished by the name of by or false waters

Haller supposed that the decidua was formed by the uterine vessels. Dr. Hunter thought the decidua originated in coagulable lymph. John Hunter attributed its formation to coagulated blood, forming a pulpy substance on the inner surface of the uterus. Burns says, "that the decidua consists of two layers, one highly vascular, proceeding directly from the uterus; the other, which is most probably formed by these vessels, more fibrous and gelatinous; and, when this is removed, the primary vessels or outer layer may be seen like a fine efflorescence covering the surface of the uterus. In some cases the decidua extends a little into the fallopian tubes; in other instances it does not. In no case does the cervix uteri form decidua. It is only produced by the fundus and body of the womb, and immediately above the cervix the decidua stretches across so as to form a circumscribed bag within the uterus. In some instances we have observed this continuation to be wanting, although the parts were opened with ease. In all other circumstances these uteri resembled those where the decidua was continued across; but perhaps, notwithstanding this, there may have been a difference of

two or three days in the period of impregnation occasioning this variation. In every case the decidua, consisting of two layers, is completely formed before the ovum descends. When the embryo passes down through the tube it is stopped when it reaches the uterus, by the inner layer, which goes across the aperture of the tube, and thus would be prevented from falling into the cavity of the uterus, even were it quite loose and unattached. By the growth of the embryo, and the enlargement of the membranes, this layer is distended, and made to encroach upon the cavity of the uterus, or, more correctly speaking, it grows with the ovum. This distension or growth gradually increases, until at last the whole of the cavity of the uterus is filled up, and the protruded portion of the inner layer of the decidua comes in contact with that portion of itself which remains attached to the outer layer. We find, then, that the inner layer is turned down and covers the chorion, from which circumstance it has been called the reflected decidua. Thus we see, that wherever the ovum descends, it is encircled by a vascular covering from the uterus, which unites in every point with those shaggy vessels

which sprouted from the chorion, and which made what was called the spongy chorion. One part of these vessels forms the placenta, and the rest gradually disappear, leaving the chorion covered by the decidua." The liquor amnii, or the waters, as they are denominated in labour, are generally transparent, though they are sometimes of a dusky brown colour. They are contained, as the name implies, within the bag of the amnion, and, when analysed, they yield principally water, with a small proportion of mucus, saline matter, and earth. This fluid serves several important purposes in pregnancy; it furnishes a yielding and easy support for the foetus in utero in the early months; it protects the foetus from any mechanical or spasmodic contractions of the womb; and in the latter months it equally preserves the uterus from the plunging and kicking of the child. It allows of easy motion within the uterine cavity, gently distending it, and preventing any morbid adhesion of its parts. In the time of parturition every practical accoucheur is aware how much more quickly the os uteri is dilated by the membranes forced down in the form of a cone than by any part of the child's body.

CHAP. II.

ON CONCEPTION.

We do not intend to lay before our readers even a small part of what has been said and written on this wonderful and difficult subject; but, as a treatise on obstetric science would be incomplete without a slight view of the different opinions respecting generation, we shall, as briefly as possible, detail some of the theories which have prevailed in the different ages of the world; premising our obligations to Dr. Denman for the materials of the sketch. With him, we believe, that the first part of the process, by which primordial existence is established, from the minuteness and complication of the objects to be described, and from the retirement of the attending circumstances, is probably involved in too much obscurity to be discovered.

In reference to this subject we cannot deny ourselves the pleasure of quoting literally the following passage from his Introduction to the Practice of Midwifery, p. 105:—"Through all nature there is not found a single body which consists of materials lying in confusion. However small, and apparently insignificant, every particle exhibits proof of the majesty and wisdom of God ; and it may be presumed that the minutest elementary parts of every substance are originally composed and wrought up in the most regular order into what is called form ; yet, in mineral substances, it is a form so immersed in matter, that it is ever restrained from the acquisition of the excellence of a living body, unless there be a previous destruction of its present form ; but the more refined the matter the more perfect is the form, and the more perfect the form, the more exquisite are the properties. Hence the common observation seems to have been made of the encroachment, as it may be called, of one order of natural bodies upon another ; of the near accession of the finest minerals to the lowest vegetables, and of the first vegetables to the lowest animals, in such a manner that they can scarcely be distinguished."

Impregnation may be defined that function whereby the seminal fluid applied to the female genital organs, excites the various generative actions, thus ultimately producing the foetus. Pythagoras supposed, that from the brain and nerves of the male, a moist vapour descended in the act of coition, from which similar parts of the embryo were formed; the grosser parts were composed of the blood and humours contained in the uterus, and, according to the laws of harmony, seven, nine, or ten months were required for the perfection of the foetus.

Empedocles thought that some parts of an embryo were contained in the semen of the male and others in that of the female, and that, by the mixture, the embryo was formed. He was likewise of opinion that the desire of procreation originated in the natural tendency of the separated parts to be united.

Hippocrates approached very nearly to this view of the subject, maintaining that conception took place in the cavity of the uterus by the admixture of the male and female semen; both of which contained the organic principles of the embryo.

Aristotle, forgetting that menstruation is not common to all animals, who nevertheless

propagate themselves, denied the existence of semen in the female, imagining that the material parts of the embryo were formed by the menstruous secretion, and that the semen of the male impressed upon them, when formed, the principle of life, by which the embryo was brought to perfection.

Galen believed that the embryo was produced from the male, but that it obtained nourishment from the female.

The illustrious Harvey, whose researches on generation occupied a considerable part of his life, seems to have been fully aware of the almost impenetrable mystery in which the process was involved ; for after detailing many observations, the result of his sagacious and persevering enquiries, he explains his opinion on conception by an allusion to the almost incomprehensible properties of the magnet ; he tells us that as iron, by friction with a magnet, becomes possessed of magnetic properties, so the uterus, by the act of coition, acquires a plastic power of conceiving an embryo, in a manner similar to that by which the brain is capable of apprehending and thinking. *Videtur sanè fœmina, post tactum in coitu spermaticum, eodem*

modo affici, nulloque sensibili corporeo agente prolifica fieri, quò ferrum a magnete tactum, hujus statim vi dotatur, aliaque ferramenta ad se allicit.—*Harv. Exercitat. de Concept.*

The opinion of Hamme, adopted by Leuwenhoeck, obtained great celebrity and applause, as the facts on which it rested were supposed to be demonstrated by the microscope. He asserted that in the semen of all male animals, there was an infinite number of animalculæ, in each of which were contained the perfect rudiments of a future animal of the same kind; and that these required no other assistance from the female than a proper bed for their habitation, and nutriment for their expansion. The opinion was soon met by the observation of mixed generation, as in the case of a hybrid or mule, which, being procreated by two animals of different species, partakes in an equal degree of the nature and likeness of the male and female parent. This seems an unanswerable refutation of the doctrine, and it is now universally believed that Leuwenhoeck's animalculæ are nothing more than parts fitted for organization.

At length the aid of chemistry was brought

to bear upon the subject. The chemists presumed that the male semen was of an acid, and the female of an alkaline quality, from the mixture of which an effervescence arose. From some particles which subsided, on the conclusion of the effervescence, they fancied that the embryo was formed, the fluid parts becoming the waters of the ovum.

Dr. Blundell, in some published "experiments on a few controverted points respecting the physiology of generation," says that among the various questions which have been raised, respecting the generation of animals, there is one as yet undecided; which has not, perhaps, been hitherto investigated with all the care it deserves. It may be demonstrated that, in this curious process, the male furnishes the semen; and the female the rudiments; but whether these two substances must have access to each other, in order that the young animal may be formed, is a question which still admits of dispute. Notwithstanding the labours of physiologists, we are not as yet in possession of any regular system of experiments, proving that the semen must have access to the rudiments in those forms of brute generation which most nearly resem-

ble our own. In the present state of our knowledge the reverse of this position seems, at least, not improbable, as the experiments of Dr. Haighton have shown that evidences of generation may be produced in the ovaries, although the semen has been excluded previously to sexual intercourse by the closure of the fallopian tube.

On a review of the results of his experiments, Dr. Blundell thinks it not improbable that, for the completion of generation, the semen must have access to the rudiments, and yet that, notwithstanding the necessity of these approaches for its completion, the process to a certain extent may be accomplished without them. These are the two leading propositions it has been his endeavour to establish ; at the same time he has further attempted to show, that the corpus luteum is not a proof of genuine impregnation ; that the semen, at least occasionally, penetrates as far as the ovaries ; and that however copiously this fluid may be absorbed into the vessels, it is incapable of giving rise, by any impression there, to the complete circle of the generative actions.

STERILITY.

Sterility may depend upon many causes ; but the chief are, we think, too early marriage, ill health, too frequent sexual intercourse, and dysmenorrhœa. We have frequently observed that very young married females have not had children, and that a deranged state of the female health has prevented conception, which has taken place where the health has been restored. The effect of frequent intercourse in inducing sterility is obvious from the case of prostitutes, in whom it is said, the fallopian tubes frequently contract adhesions with the contiguous parts of the peritonæum ; and the influence of an opposite state of things is deducible from the fact of the prolific results of the marriages of old men with young wives. Dysmenorrhœa, menorrhagia, and the formation and evolution of a false membrane from the internal surface of the uterus, are frequently attended by sterility. In one lady there was dysmenorrhœa,

with a profuse flow of the catamenia and of coagula for ten years after marriage, and then conception took place; but at this very time the uterus itself was diseased, with morbid growths and partial suppurations, of which the patient died a few days after delivery. This subject is altogether a very interesting one; but it requires further investigation. To restore the general health—to limit the frequency of intercourse—and, in cases of dysmenorrhœa, a mercurial course, offer the greatest chance of success in the removal of this evil.

CHAP. IV.

OF THE SIGNS AND DISEASES OF PREGNANCY.

It is to be expected that so important an organ as the uterus, on the occurrence of any great change in its condition, should evidence such change by indications in other parts of the body. The law of sympathy is one of universal prevalence, and the uterus may fairly be considered the great centre of this influence in the female system. We have already seen that the perfect developement of the uterus, or the establishment of that function which capacitates it for conception, is attended by many remarkable consequences, and in pregnancy these effects are not less astonishing: there is scarcely any part or viscus, there is scarcely any action throughout the whole system, which is not influenced in a greater or less degree by impregnation.

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These changes have naturally excited much attention, not only from their furnishing proof that conception had occurred, but also from their originating symptoms which, if not controlled, would, in many instances, induce an abortive result of the generative action. Hence it is that medical writers have elaborately investigated these circumstances, and with the signs of pregnancy have generally dwelt at length on these changes, which they have denominated its diseases.

It is evident that the term disease, in this use, of it requires some qualification. We do not attach the same meaning to it as in affections independent of pregnancy; but, as some of the disordered actions of this state are so trivial as to be regarded merely as signs of its existence, so there are others, especially in the more advanced periods, which require judicious medical aid. We shall here adopt the common division, and shall class the affections of this state under two heads, the symptoms of early, and the symptoms and diseases of more advanced pregnancy: regarding the quickening as the point of separation between the two. By this arrangement we follow out our own view of the subject, that

the changes immediately consequent on conception rarely demand the appellation of disease; while those of the latter class, however naturally connected with the gravid state, do sometimes require the most decided and prompt treatment. It must, however, be remarked, that, as in fever there are scarcely two cases which exactly resemble each other, so in pregnancy there is the utmost diversity; some women, if they suffer at all, complain only of the slightest inconvenience; while others regard the time of gestation as replete with indisposition and miserable sensations. In some instances, there is so little sympathy or consent of parts, that pregnancy seems to proceed independently of any other organ; while in others, every function of the body partakes of the irritability which impregnation has induced. And although the division we have adopted is generally correct, we do find that some women are so affected by the least increase in the weight of the uterus, that the later affections of gestation arising from the pressure of this organ on the neighbouring parts, sometimes appear in the early months. On the whole, the gravid state is not necessarily one of disease; it is an altered

condition, productive of less or greater inconvenience in proportion to the observance or neglect of a simple and natural course of life. If, because of conception, healthy exercise be abandoned, and the ordinary occupations of life be laid aside, while the same quantity of nutritive and perhaps stimulant food continues to be taken, we have here a cause of disease which, independently of pregnancy, would induce the most injurious effects. And, while we are aware of the necessity which sometimes exists in certain periods of this state for quietude and repose, we cannot forbear the expression of our opinion, that a moderate degree of activity will conduce not only to less inconvenience during gestation itself, but to an easier labour. The example of women of the lower classes, who follow laborious occupations in the open air, without scarcely any regard to pregnancy, is decidedly in favor of the conclusion. Nor can we divest ourselves of the belief, that the favourable or unfavourable circumstances of the mother, during pregnancy, more especially as it regards her active or sedentary and luxurious mode of life, do very often materially influence the health and vigour of her offspring. We

do not assert this as an established fact, but we have been led to a conclusion of the kind from observing, in a few instances, where we knew the mother to have been remarkably indolent during her pregnancy, that the children were torpid and sluggish in the performance of all their functions ; more especially in the healthy evacuations of the contents of the intestines. In two instances, occurring in the same family, we thought we could perceive great tendency to hydrocephalus from this cause.

SECT. I.—*Signs of the Early Months.*

The suppression of the menses, more especially if sudden after previous regularity, is generally the first circumstance which leads women to suspect pregnancy. It is undoubtedly true that amenorrhœa may, and frequently does, arise from other causes ; but, as a single sign, we think it of great value. Dr. Denman affirms that he has never known a pregnant woman menstruate ; and in this opinion

we almost agree, although instances have occurred to us where there have been, in the early months, several returns of a sanguineous discharge, thrown off in clots and coagulating, similar to the catamenia in colour, and arising, perhaps, from the upper part of the vagina, from the inferior portion of the uterus, and more especially from its cervix, which we know, in the early months, are unoccupied by the decidua. These discharges have not observed any regular intervals; they were not ushered in by any symptoms characteristic of approaching menstruation; nor did they continue beyond the third or fourth month. Such at least is our experience, but Dr. Dewees strongly contends this point, and adduces cases in which the catamenial discharge did regularly appear during the first three or four months of pregnancy. These instances must be regarded as exceptions to the established rule, and they should induce still greater caution, in our opinion of doubtful pregnancy, as they narrow the certain ground which otherwise we appear to possess. We have lately been called upon for an opinion in some cases of this kind; and

though there was in all of them abdominal and mammary enlargement, and in others, more or less of the various symptoms of this state, in none was there suppression of the catamenia. For ourselves, we should feel more confident of the existence of pregnancy, from an entire suppression of the catamenia, all other signs, with the exception of abdominal increase, being absent, than we should from the united assemblage of all the other indications, if the catamenial secretion continued with its accustomed regularity and of its natural character.

Cardialgia, nausea, and vomiting, are almost constantly attendant on conception ; we have known several instances, where there was scarcely a sensation of sickness throughout the whole period ; these are, however, very rare, as it much more constantly happens, that during nearly the whole of the early months, immediately on getting out of bed, there is a vomiting of a glairy, and sometimes of a bilious, fluid. Puzos considered vomiting as very salutary ; and Denman says, "if it should not be very violent, and if it occur only in the early part of the day, it is generally found to be serviceable by exciting a more

vigorous action of the uterus, and by bringing the stomach into a better state ; for the vomiting of pregnant women is not always a mere effort of straining, or a discharge of the food and common humours of the stomach. The matter evacuated sometimes shows a very disturbed state of this organ, or a morbid secretion of such a kind as to be offensive to the stomach itself ; and besides correcting or evacuating the offending humours, it is necessary that we use our endeavours to change or to appease the present action before the indication to vomit be suppressed." We know not how far vomiting may be beneficial in this state ; it certainly does occasionally relieve the stomach from an accumulation of disordered secretion, and thus far may be of service ; if, however, it should continue to the later months, when the abdomen is large, and its parietes distended, we shall hear very frequent complaints of the straining and spasm to which it gives rise. At this time, as well as earlier, it will be right to attempt its mitigation by the various remedies usually employed for this purpose. The application of leeches to the pit of the stomach, of a small blister, or of an opiate

plaster, with an additional quantity of this substance in its composition, or of brandy and opium in a liquid form, all being externally employed, will frequently impart great relief. One grain, or even less, of solid opium, we have frequently given with most decided advantage; and in the latter periods, when the head sympathises in the disturbance, it may be necessary to take away blood from the arm or from the back of the neck; mild aperients and laxatives being exhibited. It is deserving of notice, that the vomiting generally comes on when the patient changes from the lying to the erect position; and it is frequently useful to maintain for some little time the recumbent posture. We lately attended a lady who was much distressed by *heart-burn*; and, after going through the whole round of remedies, she commenced taking prepared chalk, and through several pregnancies consumed an ounce of it every two or three days. It had this additional advantage, that it not only relieved the heart-burn, but preserved the bowels in an invariably aperient and comfortable state. It is manifest, that these affections are only important as signs of pregnancy, when they

concur with the whole series of indications appertaining to this state ; for no one would presume a woman to be pregnant, in the absence of other proofs, merely because she was sick and vomited. *Loss of appetite* accompanies pregnancy, but it is a sign on which evidently no dependance can be placed. This state is often attended *by a continual tendency to febrile excitement*, the pulse is increased, the palms of the hands are heated, the cheeks are not unfrequently flushed, and emaciation and irritability of manner are the result. If any inflammatory disease should occur in pregnancy, and even independently of such circumstance, the blood, when drawn, will have a sizzly appearance ; its constituent principles being slightly altered.

Great stress has been laid on the *enlargement of the mammæ*, and, if it be accompanied with tenderness, flying pains, and a secretion of milk, it is a very satisfactory sign. It must, however, be recollected, that the enlargement of the mammæ may arise from adeps as well as pregnancy. If it be merely an accession of cellular substance, or fat, it will have a soft cushiony

feel; if it be produced by pregnancy it will have a glandular, rather knotted, and uneven character.

The enlargement and darkening of the areola has been regarded almost as an infallible sign in first pregnancies. We have known three instances where it was increased in breadth, decidedly darkened in colour, and where there was slight secretion from its surface, without the existence of pregnancy. If it concur with the other indications, it is a valuable auxiliary corroboration. Having now described those changes which almost invariably attend early pregnancy, we shall briefly notice some anomalous and occasional affections, arising from peculiarity of constitution, such peculiarity being excited into activity by gestation.

Frightful dreams are, in some individuals, a very good diagnostic sign; and Dr. Haighton used to relate the case of a lady, under Dr. Lowder's care, who was compelled to hire a nurse to awake her when she was very much discomposed in countenance. We occasionally attend a lady, who invariably knows herself to be pregnant, by pain in the teeth; and many women unerringly arrive at

the same conclusion, from the existence of painful sensations in unusual parts, as the toes, fingers, ears, &c.

We may remark here that the anomalous signs are not very valuable in first cases, and for this reason, that, not having been previously pregnant, a patient cannot tell whence they arise, or with what state of system they are connected. We have before observed that pregnancy is not a morbid, but an altered state, and *plethora or increase of the circulating fluid* may be enumerated amongst the causes giving rise to some of its diseases. There is one affection, probably arising from this cause, which is very distressing, although happily not very common, we mean the *prurigo pudendorum muliebrum*. We are aware that women are subject to this disease independently of impregnation; and we mention this fact the more willingly, from having seen two cases, where conception seemed to have been prevented by its continuance; at all events, it occurred immediately on its cure. The most interesting case occurred in a lady of twenty-six, who had been married five years, and had menstruated regularly during that time. For the last three years

she had suffered so acutely from prurigo as to render connubial intercourse impossible. She had followed almost every professional opinion, and every remedy seemed to have been tried unsuccessfully. We put her on a gentle mercurial course, there not being the slightest reason for suspecting any venereal taint; and the affection of the gums was kept up in a mild degree for two months. At the end of this period she was so much improved as to disregard the prurigo, and in another month she became pregnant. The child when born was healthy and strong. It has fallen to our lot to see a good many cases of *pruritus* or *prurigo*, in pregnant women, and in several of them we have experienced extreme difficulty in its cure, and in some, even in its alleviation. We cannot confirm Dr. Denman's observation, that those women who carry a dead child are more subject to this complaint than when the child is living. In no one instance we have seen, has this unfortunate result been realized. Owing to some suspicion of a venereal taint, we were once permitted to examine the parts in this disease, and the internal surface of the labia, and the mouth of the vagina, were

completely studded with little pustules, containing a fluid less white and viscid than real pus. Ablutions with warm water and tincture of opium, the black wash, consisting of one scruple of calomel, half a scruple of opium, and two ounces of lime water, the liquor aluminis comp. and a strong solution of borax rose water, very frequently applied, either warm or cold, will be found amongst the best remedies. It may occasionally be necessary to apply leeches to the parts, which we have done more than once, and to employ constitutional treatment. In one lady, the suffering was so intense as to demand the use of opium internally every night, for above a week ; and in other instances, small doses frequently repeated of the carbonate of soda, and calcined magnesia will be found highly beneficial ; we have also ordered lime water and milk, soda water and milk with advantage. We must again urge the very frequent, or rather constant application of the external remedies, which with an aperient state of the bowels, and a mild and rather low diet will, in many instances, conduce to the desired result ; blisters in the neighbourhood of the parts we have tried, and have been pleased with their effects.

Irritability of a nervous and hysterical kind is frequently appearing in pregnancy ; it will not be relieved by the abstraction of blood ; mild aperients may be given ; but when it occurs, as is generally the case, in women of spare and delicate habit, calumba bark and valerian, or any stomachic, given in the form of infusion, will do good. Women, when but little advanced in pregnancy, often complain of *inability to walk*, accompanied by *pain in passing water*, and a *discharge from the vagina*, which last, as it may be satisfactorily attributed to pregnancy, ought not hastily to be considered venereal. In cases of suppression of urine Dr. Haighton used to recommend that females should be instructed to relieve themselves, by passing the finger to the os uteri, raising it up, and thus taking off the mechanical pressure from the womb ; and if, in addition to this, they hold their breath, and force down, the urine will often be discharged.

Retroversion of the uterus used to be regarded with extreme apprehension, and, were we to judge from what has been written respecting it we should think it an occurrence

of the most dangerous kind. The fears which were formerly indulged are considerably modified; it being well known, that in many instances the timely and continued introduction of the catheter will suffice for its removal; and even where this is not the case, if other circumstances are favourable, it may be allowed to continue for some time without fear of injury. We do not urge these remarks as an apology for ignorance and inattention, but rather to allay any undue excitement either in the practitioner or the patient, and to prevent any unnecessary interference, which might, by producing abortion, originate a mischief worse than the original affection. Retroversion consists in an alteration of the position of the womb; and, for the first accurate description of the change which the uterus suffers, we are, in this country, indebted to Dr. Hunter, in 1759, Gregoire and Levret having previously written upon it.

If the pelvis be of the usual size, it may occur in the second, third, or fourth month, and, if rather more capacious than common, as late as the fifth. The attention of the patient is first excited by difficulty in passing

the urine; and by tenesmic sensations in emptying the rectum. If the retroversion be complete, we shall on examination, discover a tumor formed by the fundus uteri, between the vagina and the rectum; and the os uteri, if felt at all, will be found turned upwards and forwards towards the pubes. If an examination be made, per anum, the fundus uteri will be ascertained forcing the rectum into the hollow of the sacrum; and, if the finger of the other hand be in the vagina at the same time, it is not difficult to determine that the uterine tumor is confined between the rectum and the vagina. Retention of urine is the most common cause of retroversion (Dr. Denman's Introduction to Midwifery, p. 78); and women who live in an humble situation of life, or in an unrefined state of society, are scarcely ever liable to this complaint, because they are free from the restraint of company, and can evacuate the contents of the bladder whenever it is necessary. But those, who, in a middle state of life, with decent yet not over refined manners, have not cast off the bashfulness of the former, nor acquired the freedom of the latter, are most subject to the retroversion of the

uterus. The great danger in this case arises from not ascertaining the precise character of the disease; although even here, if the bladder be emptied, alarming consequences are not likely to ensue. Our first object is to evacuate the urine, and the catheter may be slightly curved, the concavity being directed to the sacrum, or we may use a flexible male catheter, although in general the common instrument succeeds. The catheter must be very slowly and delicately introduced, and should not be pushed further into the bladder than is necessary to relieve the distension. We may, perhaps, facilitate its passage, where there is difficulty, by introducing the finger into the vagina, and depressing the os uteri, at the same time relieving the bladder from the vaginal tumor. Pressure on the abdomen will enable us more completely to empty the bladder. As soon as we have completed this operation, a clyster or some aperient medicine should be exhibited.

Instances are recorded, where the retroversion has been immediately removed on the evacuation of the contents of the bladder; but it may continue, and Denman seems to think, that if the symptoms are not urgent,

the uterus may remain in a retroverted state for many days or weeks, without any other detriment than what may be occasioned by the temporary interruption of the discharges by stool or urine ; and, contrary to all expectation, it has been proved, that the uterus, when retroverted, will be often gradually and sometimes suddenly restored to its position, without any assistance, provided the cause be removed by the occasional use of the catheter. It appears that the enlargement of the uterus, from the increase of the ovum, is so far from obstructing the ascent of the fundus that it contributes to promote the effect ; the distension of the cervix becoming a balance to counteract the depression of the fundus ; for no cases of the retroverted uterus admit of reposition with such difficulty as in women who were not pregnant, in whom the uterus underwent not any or no material change.

In the practice to which these statements would give rise we accord to a great extent, but if, in the course of a short time, a reposition of the uterus did not spontaneously occur, we should feel disposed, by manual assistance, to attempt the replacement. We have only seen one case of complete retrover-

sion of the uterus, and this was produced gradually by an overloaded state of the bladder. It occurred in the third month, in a patient who previously to pregnancy, had been the subject of retention of urine. We were compelled to examine, by the severity of the symptoms; the distention of the bladder, and the suffering thereby induced, rendering the lady very solicitous to know precisely her situation. We were not long in ascertaining that the natural position of the os uteri was changed, and after some ineffectual efforts to reach it, we examined by the rectum, and the tumour formed by the fundus uteri, between the intestines and the vagina, was readily felt. The catheter was immediately introduced, and a large quantity of water drawn off. A dose of castor oil, and an injection of simple gruel and salt was advised, and the patient was recommended to lie on the abdomen. The painful symptoms were much relieved, and after a repetition of this treatment several times, things were allowed to pursue their usual course. During the delivery of this lady nothing remarkable occurred.

Dr. Dewees entertains serious apprehensions from the continuance of retroversion,

and regards it as replete with eventual if not with immediate danger. "The most pressing symptom is the stoppage of the urine, rendering the use of the catheter absolutely necessary, and the bowels ought to be emptied daily, either by medicines of a mild kind or by injections: if this plan should not succeed in restoring the fundus, we should then maturely consider the propriety of mechanically replacing it: to aid us in our judgment, we should consider, first, the period of gestation; secondly, the degree of developement the uterus has undergone; thirdly, the nature or severity of existing symptoms. The period of gestation should almost always influence our conduct in this complaint; and we may lay it down as a general rule, the nearer that period approaches four months, will be the necessity to act promptly in procuring the restoration of the fundus; the reason for this is obvious, every day after this will but increase the difficulty of restoration, from the continually augmenting size of the ovum. The degree of developement should also be taken into consideration, as some uteri are as much expanded at three months as others are at

four ; consequently, when this obtains, there is a decided reason for acting earlier than may at other times be necessary ; so also at the fourth month, if the developement be less than is usual for that period : we may, every thing being equal, delay the attempt at reposition if any reason present itself to make this eligible. The extent or severity of symptoms must ever be kept in view ; as, for instance, where the suppression of urine is complete, and not to be relieved by the catheter, in consequence of the extreme difficulty or impossibility to pass it : here we must not temporize too long, lest the bladder become inflamed, gangrenous, or burst. For the bladder, from its very organization, cannot bear distention beyond a certain degree, or beyond a certain time, without suffering serious mischief. From this we conclude, that the uterus should, in every instance, be restored when practicable, at or very little after the fourth month ; if left longer than this, the risk of not succeeding is every day increased ; and we are firmly of opinion, that nothing can justify a neglect to do so at this time, more especially when

it proceeds from the vain hope, that nature will relieve herself at the full period of gestation."

Dr. Merriman entertains nearly the same views of this complaint as Denman, and thinks that a retroversion of the uterus may exist at the full term of utero gestation; and that many cases on record of supposed extra-uterine gestation of the ventral kind, were in reality cases of retroverted uterus. Having determined on the replacement of the uterus, the patient is to be put into such a situation, that the hips shall be more elevated than the shoulders, and the thighs brought to right angles with the body. We may then pass one or two fingers of the left hand into the rectum, and by the aid of a piece of sponge, fastened to the end of a small bit of cane, according to the suggestion of Dr. Haighton, the gut may be gently pushed up, until it comes in contact with the promontory of the sacrum, thus making pressure on the retroverted womb: two fingers of the right hand may now be advantageously introduced into the vagina, so as to depress the cervix uteri, thus acting on the womb from two points. If we fail after a judicious repetition of these

measures, Dr. Hunter advises that the ovum should be tapped, so that by letting off the water the bulk should be diminished. This will very often be attended with great difficulty, and if we succeed the bladder will require very sedulous attention; as, till the *quickening* is fully established, we must not allow any extensive accumulations of urine in this viscus. It is scarcely necessary to remark, that when the uterus has fairly emerged from the pelvis into the abdominal cavity, it cannot again be retroverted.

SECT. II.—*Of Quickening.*

The quickening of the child, so termed because, at this period, it was erroneously supposed to be first endowed with the principle of life, is an important event. The *earlier* affections of pregnancy, or those which may be supposed more especially to depend on the *irritability* connected with this state, are succeeded by a new class of affections, which result in a great measure from the

increased *weight* of the womb, and from its consequent *pressure* on the surrounding parts. The uterus has now emerged from the cavity of the pelvis, and rests on the *ossa pubis*, by which circumstance alone it is freed from the liability to *pressure downwards* by the superincumbent abdominal viscera. We must allude, before we proceed further, to the erroneous opinion, so long entertained, and on which the English law is founded, that when the child quickens it first acquires vitality. From the moment of impregnation the foetus is in possession of this principle; and it is only at this time, from circumstances we are about to explain, that it affords increased manifestations of this power. It is to be expected, when the uterus is confined within the cavity of the pelvis, when the foetus is exceedingly small and weak, and when the proportion of the liquor amnii is large compared with the size of the child, that its movements should be indistinct; but when the relative quantity of water is smaller, when the womb has fully emerged from the pelvic cavity, into a situation where it is less restrained, and where the sensibility is perhaps greater, the muscular action of the child is

more decidedly felt. It is possible for women to be deceived by the intestinal movements of wind, fancying that they are the motions of the child. This deception most frequently occurs when there is a disposition to favour the idea of pregnancy. If this feeling did not exist, it would be easy to convince such patients that genuine uterine sensations, produced by a child in the cavity of the womb, can only be felt in certain parts of the abdomen. We are now in attendance on a lady who, from irregularity of the catamenial discharge, supposes herself pregnant; she is twenty-six years old, and has been married five years without having once been in this state. Several of the early signs of pregnancy, as slight nausea, darkening of the areola, and capricious appetite have existed. The breasts are much enlarged, and the abdominal intumescence is considerable. We have always entertained doubts as to this lady's state; for during the eight months of supposed gestation she has very sparingly menstruated six or seven times. On examining the abdomen we perceived the fundus uteri behind the ossa pubis, and we felt convinced, on further pressure by the hand, that

the abdominal enlargement was principally attributable to aërs and air. On examination, per vaginam, the cervix uteri was not at all developed; it was of its original length, and we were able distinctly to ascertain that the uterus was not at all increased in size. We think these are the cases of supposed pregnancy most commonly occurring; a lady is desirous of having a family, never having perhaps been a mother, or being advanced to that age when it is improbable she shall again bear children. From some accidental circumstance the catamenia become irregular, or they are suppressed for a few weeks beyond the usual period. Expectations are cherished; rest is enjoined; and capricious appetite, in conjunction with some other of the early signs, leads the patient to believe that she is most probably pregnant. When menstruation again occurs it is thought rather unnatural; but as every effort is employed to diminish its quantity, and to shorten the time of its flow, it may not continue more than a day and half, or two days. Indolence and indulgence succeed to activity; the same quantity of nutritious food continues to be taken; the bowels become torpid from want

of exercise, and from the accumulation of the ingesta. If we add to these circumstances the secretion of air in the intestinal canal, the deposition of adipose matter in the abdominal integuments, and the fatty enlargement of the mammæ, we have no difficulty in comprehending how such patients may deceive, not only themselves, but, by strong statements of their symptoms, even their medical attendants.

We could enumerate several such cases as these, and one in particular, where the abdomen was never exceeded in size, in the ninth month of pregnancy, excepting perhaps in the case of twins; and where there was every concurrent indication, excepting the suppression of the catamenia. It is needless to add, that even here there was no pregnancy. We wish to observe that the practitioner ought *never absolutely* to commit himself, *as to the existence of pregnancy, without an examination of the uterus itself*; and, as much as possible, to simplify and illustrate this important and practical part of our subject, we shall recapitulate a few particulars. The fundus uteri, when it ascends from the cavity of the pelvis, is situated *forwards*, and

its mouth and cervix *posteriorly*; it is manifest therefore, that the intestines cannot lie *before* it (an important circumstance in external enquiry); but they must be situated *above, posteriorly*, and at its sides. The fundus again, previously to its ascent, and in proportion to its increasing developement, will afford a large surface for the pressure of the superincumbent intestines; and the mouth and cervix uteri, will necessarily be forced *lower down in the vagina*. The mouth of the uterus is generally sufficiently open, in the unimpregnated state, to admit easily the tip of the finger. Soon after conception it is *closed*, and is only to be penetrated, if gentle efforts alone, are employed, just within its edge. As pregnancy advances, it becomes gradually *softer*, although it is not till the fifth month that the cervix is decidedly developing itself. In the seventh month, this process is so far advanced, that we may, by a well conducted examination, feel the head of the child; in the eighth month, the neck is completely destroyed, for the purpose of enlarging the uterine cavity; and is situated as high as the brim of the pelvis.

These facts should always be impressed on the mind, when we make an examination, and if we conduct it slowly, remembering that the indications furnished by disease, resemble to some extent, those of the gravid state, we shall not be liable to error. If we examine in the *second* month, which is seldom required, and still more rarely necessary, we shall perceive the *gravitation of the uterus downwards*, and the cervix will be *closed*. When elevated by the finger, it will to an experienced examiner feel *heavier*, and rather more *resisting* than in the unimpregnated condition. We should not, however, express a decided opinion from the indications of this early period. In the third and fourth months, we may arrive at greater certainty, from the *increased size and weight* of the uterus. During the fifth month, an examination may be conducted with confidence, the uterus being *risen above the brim*, and by pressing its fundus, we may impart to the fingers in the vagina a distinct sensation of resistance and rolling. Under these circumstances we can at any rate pronounce the uterus to be enlarged; and, if we hesitate as to the precise nature of its contents, we

have at least obtained some positive information. After this period, the *alterations* of the cervix, the *increasing developement* of the uterus, and the *movements* of the child will generally conduct us to a certain and well grounded opinion.* If there be any doubt, after examining by the vagina alone, we advise the practitioner to introduce one or two fingers into the rectum, thus placing the uterus between the action of both hands, in which case he can scarcely fail to ascertain with precision the extent of the enlargement.

* The movements of the child may generally be excited by the application of the hand upon the bare abdomen, either hot or cold, according to the season. Morgagni recommends, in summer, that the hand should be previously reduced in temperature by placing it in cold water or ice, or if the weather be cold, that its temperature should be previously raised, by placing it in warm water. We have often provoked the movements of the foetus by laying the hand rather firmly over the uterine parietes, and directing the patient to cough.

SECT. III.—*Of the Signs and Complaints of advanced Pregnancy.*

We shall now treat of the class of complaints incident to the *advanced stages* of utero-gestation, of which it is scarcely necessary to observe, that they are more painful and dangerous than those we have already enumerated. For while the death and premature expulsion of the foetus is the worst result of the one, the safety of the mother, as well as the destruction of the child, may be involved in the other.

Nausea, heartburn, and vomiting may continue, although the uterus has risen above the brim of the pelvis; and we think that patients who do not experience an almost entire exemption from these evils, or at least a considerable amelioration of them at this period, are generally harassed by them throughout the whole term of gestation. We are not aware that their continuance exerts any injurious influence, either on the labour itself or the recovery; on the contrary,

we have thought they even conduce to a more easy parturition, having observed that those patients who have suffered scarcely at all from the complaints of gestation, have frequently had difficult, rigid, and protracted deliveries. We do occasionally meet with severe and alarming cases of continued vomiting, where it is necessary to maintain an almost entirely empty state of stomach, nourishment being acquired by clysters of beef tea and jelly. In one of these instances, after having given opium, I ordered a teaspoonful of lime water, or soda water and milk, every ten minutes. In the course of the day, the lime water was omitted, and the quantity of milk increased, till at length the stomach could again retain small quantities of solid food. *Small* doses of the calcined magnesia, taken two or three times daily in milk, will frequently relieve the sickness, by inducing an aperient state of the bowels. A *few leeches* to the pit of the stomach, followed by a *small blister* or an *opium plaster*, will occasionally produce much good. I have also prescribed, especially where there has been a disposition to syncope, fifteen or twenty drops of pure brandy every few mi-

nutes, and have been pleased with its effects. I lately attended a lady who entirely discarded tea and coffee at breakfast, substituting in their stead a glass of cold spring water, with which she could generally eat a crust of bread. When the alkaline remedies fail, recourse must be had to the vegetable or mineral acids, and the juice of the lemon is preferable. Some patients take largely of this latter remedy, mixed with water, not only without injury, but with beneficial effects.

If, notwithstanding every remedy, the vomiting goes on to debilitate the patient, she may be reduced to a state of extreme danger; in these circumstances, *after consultation*, we think it very justifiable to induce *premature* labour. Dr. Marshall Hall gave us the particulars of a case, occurring under his own notice, although not under his own care, where vomiting continued in spite of every remedy which a most experienced practitioner could suggest, and which terminated fatally in the seventh month. Here premature labour would probably have saved the patient.

Jaundice sometimes occurs in the latter stages of utero-gestation, more as the consequence of this state than from any schir-

rosity of the liver or disease of the biliary ducts. The treatment is generally confined to palliatives, although there is perhaps no sufficient reason why pregnant women should not bear the operation of the proper remedies for its cure. We should especially recommend an early regard to affections of the liver during pregnancy, if they be conjoined with inflammation. A lady, the wife of a very able practitioner in the country, was attacked with symptoms of *jaundice* in the latter months; they were not altogether disregarded, but inflammation of the liver succeeded, and notwithstanding the most vigorous treatment it terminated fatally in a few days.

Costiveness is often a very troublesome attendant of the later periods of gestation, arising from the pressure of the enlarged uterus on the rectum. *We do not advocate the continual exhibition of purgatives*, much less those of an aloetic or drastic kind; still, as torpor of the bowels is naturally incident to pregnancy, we are always desirous to prevent any such accumulation of feculent matter as may give rise to injurious consti-

pation. Not to dwell on the distressing sensations produced by excessive and almost continual constipation previously to labour, we have known during the act of parturition itself, very serious delay arise from this cause, and more than once we have been compelled to *empty the rectum mechanically and wash out its contents*, before the head could be propelled into the world. Denman says, "that he was at one time very assiduous in preventing costiveness; but that afterwards he became much less so, observing that all women who went on properly, especially in the early part of pregnancy, were liable to this state of the bowels, which may have some relation to the strong action of the uterus at that time. Costiveness may, therefore, be considered as a state of the bowels corresponding with that of the uterus; and we never can believe that to be injurious which occurs so frequently as to be esteemed a common consequence." We may further observe, in corroboration of this statement of Dr. Denman, that not only is abortion most frequent in those patients who are habitually prone to too relaxed a state of the bowels,

but that it is frequently produced by the relaxation which succeeds the exhibition of aperients or purgatives. Patients during pregnancy must resort to opening medicine, and we always enjoin the use of that which is *most simple and mild*. A tea-spoonful of castor oil taken three or four times a week on going to bed, aided on the following morning by the injection of a pint of warm water into the rectum, will frequently preserve a comfortably aperient state of the bowels throughout the whole period of gestation. *Magnesia* in small doses, perseveringly taken, is sometimes productive of equal benefit; although from its chemical properties it is often uncertain, and sometimes violent in its operation. The following pills may also be safely taken:

R Extr. colocynthidis compositi ʒij.

Extr. Hyoscyami, gr. xv.

Ol. Cassiæ, gtt. ii. M. ft. pil, viij.

Sumat. ij. vel. iij. urgenti constipatione.

Hæmorrhoids are occasionally requiring treatment, and gentle aperients or some of the *preparations of sulphur* are productive of good. If they are very numerous and much

tumefied, *leeches* may be employed ; but pressure on each individual pile, till its cavity be emptied of the blood it contains, will impart much relief. *A pint of the decoction of poppies* with a *drachm* of the *liq. plumb. superacetas* is very useful as a *warm* fomentation, to allay irritation after a difficult and confined motion. The *injection* of a few ounces of warm olive oil, into the *rectum* *once* or *twice* a day, has often relieved the pain and heat about the anus. Hæmorrhoids may be greatly relieved by careful and attentive treatment. Let the bowels in the *first* instance be unloaded by any of the *mild aperients* already mentioned, and afterwards the inflammation and pain may be subdued, by the application of *leeches* to the distended hæmorrhoidal vessels. *Poultices* composed of *linseed meal* and poppy water will greatly aid these measures. It is scarcely necessary to add, that when the severity of the disease is over, *cold injections* and *astringent applications* will best restore the original condition of the parts. If, however, notwithstanding all these measures, the hæmorrhoidal tumours increase and perpetually harass the patient, inducing a risk of premature contraction of the uterus, there

is no reason why they should not be removed by *incision*.*

Affections of the brain, of the slighter kind, are not very unusual in utero-gestation, and from whatever cause they may arise, whether from a fulness in the vessels of the brain, induced by compression of the vessels of the lower parts of the body, or from an unusual degree of the irritation which to a greater or less extent almost invariably characterises pregnancy, they demand the *most careful*, and, in some instances, *the most prompt treatment*. We cannot divest ourselves of anxiety, lest vertigo and head-ache in the latter months should precede convulsions, immediately before or during labour; nor can we expect a complete removal of their effects, if they have been severe, till after parturition. We were a few months since called to a patient in the *fifth* month, who had sud

* We have frequently employed the following ointment with advantage:—

R Pulv. Gallar. ʒj.
 Camphoræ, ʒß.
 Tinct. Opii, ʒij.
 Ung. Cetacei, ʒj. M. ft.
 Ung. quaque nocte utendum.

denly lost the power of distinct articulation, and the perfect command of the left side of the body. The abstraction of *sixteen* ounces of blood slightly restored her speech, but it was not until *blisters*, *leeching*, *cupping*, and *purgatives* had been employed, that she spoke at all distinctly. This lady was confined prematurely, without any disposition to convulsion, and the child was born alive. Two months elapsed after delivery before she fully regained her usual articulation. These are cases requiring watchful attention from the accoucheur; the organ affected is so important, the danger sometimes occurs so suddenly, and the permanent cure, arising from delivery, is sometimes so distant, that he cannot enjoin too strict a regard to his injunctions. Patients so affected, should abstain from stimulant and fermented liquors, and from animal food; they should lie with the head well supported during sleep, and with moderate exercise, they should carefully avoid every circumstance calculated to excite and irritate the mind or to fatigue the body.

Tooth-ache is not an unfrequent attendant of pregnancy. It is seldom arising from a

decay of the tooth, and as seldom from *one* tooth alone. It more frequently happens, that the whole jaw, or the entire side of the face is affected. *Extraction* of the tooth rarely affords the desired relief, and may produce *abortion*. A *camphorated opium plaster*, *stimulant anodyne liniment*, a *hop poultice*, or a *small blister*, may all be tried, and if they do not afford absolute exemption from the pain, they will at least palliate the suffering.

Salivation, arising from the sympathy between the salivary glands and the impregnated uterus, is often associated with the gravid state. We have never known it require medical treatment, beyond the exhibition of *mild aperients* and *astringent gargles*, although we have met with it in numerous instances. Dr. Dewees relates the following case, which as it is of very rare occurrence to a similar extent, we shall give in his own words :—" We were called upon to prescribe for Mrs. I. who was advanced to the *fifth* month of her pregnancy. At the second month she was attacked by a profuse salivation ; she discharged *daily* from one to three quarts of saliva, and was at the same time

harassed by incessant nausea and frequent vomitings ; so irritable was the stomach, that it rejected almost instantly any thing that was put into it ; she now became extremely debilitated, so much so as to be unable to keep out of bed ; and when she did attempt to sit up, she would faint, if not quickly replaced. From a belief that the affection might be local, astringent gargles were freely employed, but with marked disadvantage. A large blister was next applied to the back of the neck, with decided, but transient benefit ; that is, the salivary discharge was less, the nausea diminished, and the vomiting less frequent ; but this favourable impression was but of three or four days duration : for, after this time, all the unpleasant symptoms returned with their former severity. An emetic of ipecacuanha was now exhibited, followed by a cathartic of rhubarb and magnesia, without the smallest benefit ; soda water, lime water and milk, milk itself, &c. were, in turn, unavailingly employed. We now put our patient upon a strictly animal diet, and ordered ten drops of laudanum morning and evening, and fifteen at bed-time : this plan succeeded most

perfectly in the course of a few days ; nausea and vomiting ceased, and the discharge was reduced to less than a pint per diem : and, perhaps, the force of habit had no inconsiderable agency in the production of this quantity. The bowels, during this plan, were kept open by the extract of butter-nut and rhubarb in the form of pills. This lady never had any return of this complaint in her subsequent pregnancies.

“ As a general plan of treatment in this complaint, when moderate or severe, we have constantly endeavoured to destroy the acidity of the stomach by the various antacids ; to keep the bowels free by the frequent use of magnesia ; rinsing the mouth frequently with lime water, and the use of solid animal food, together with a strict injunction to the patient to resist the desire to discharge the saliva from the mouth as much as possible. This complaint almost always abates, if it does not cease altogether, after the fifth or sixth month, when its form is moderate ; but, when severe, its period would sometimes seem doubtful. A lady informed us lately, that this affection continued with consider-

able force, during the whole period of gestation in one of her pregnancies."

Fluor albus is regarded by some authors as one of the signs usually accompanying pregnancy ; where this is the case it is generally in a moderate degree, and requires little more than the simplest local means for its management. Frequently washing the parts with a *tepid* and *weak solution* of the liquor aluminis comp. or with *warm* water alone is productive of great advantage. It is seldom necessary, and still more rarely allowable to employ vigorous constitutional remedies for the removal of this affection during pregnancy. Such measures may seriously interfere with the regular progress of this state and create a greater mischief than the one they were intended to relieve.

Irritation of the neck of the bladder, may arise during any period of gestation, although it is more frequent in the early than in the later months. The ardor urinæ and the sensation of pressure so frequently associated with this affection are peculiarly distressing. There is too not unfrequently a copious mucous discharge, owing perhaps to the in-

creased supply of blood to these parts. If retention of urine occur, the catheter must be employed, and if the irritation of the cervix vesicæ be succeeded by inflammation, venesection, and leeches low down on the pubes, must be resorted to. In general, however, the *recumbent posture*, an *anodyne injection* into the rectum, the *oleum ricini* with *mucilage*, and the *tinct. of hyoscyamus* or *tinct. of opium* will prove sufficient. We may observe that the quantity of fluid should be diminished, and that what is taken should be of the blandest kind.

Varices of the veins of the lower extremities occasionally require palliative treatment, for it is in vain to think of their permanent cure, until the removal of the superincumbent pressure of the gravid uterus. It is very undesirable that these distended veins should burst, as a considerable hæmorrhage would probably be the result. An elastic and well adjusted roller or bandage affords great support, and with the recumbent posture, is perhaps the best remedy.

Œdema of the whole body to a greater or less extent, but more especially of the labia pudendi, now and then occurs towards the

close of pregnancy. In its mild form scarcely any treatment is required ; if, however, the labia be distressingly distended, a few slight punctures may be made through the skin by the point of a needle or a lancet.

Syphilis is occasionally complicated with pregnancy, and there is no doubt of the perfect safety of submitting a patient, under such circumstances, to a judicious and mild mercurial course. By this treatment the mother will be cured, but we are not always so successful with the child; for, although it may be born free from any appearance of disease, yet in the course of a few weeks, symptoms of syphilis are not unfrequently occurring. In a lady we lately treated for this disease, and who became pregnant during its continuance, the child was born with copper-coloured spots all over its body, although the mother had been perfectly cured for at least five months previously to delivery. This infant was subsequently affected by thrush, and ulcers soon appeared on the arms and labia pudendi. At this time, we were not in attendance, but we were informed by the gentleman who had charge of the case, that these sores resisted all the simple methods of treat-

ment, and did not heal, *till a mercurial plan was pursued*. Mr. Hey, whose reputation has scarcely been excelled by any surgeon in this country, states “ *that syphilis, in its secondary form, may be communicated by the mother to the foetus in utero. ‘ That the foetus may be contaminated when the mother has never been previously affected with lues venerea in the organs of generation, and when no apparent disease existed in the father at the time of impregnation.’ ‘ That the mother remaining in health shall produce several children, each of which shall in succession become affected with syphilis a few weeks after its birth; and that the disease shall assume a milder form, in each child comparatively, until it be finally worn out.’ ”* Mr. Hey confirms these separate statements, by a reference to clearly defined cases, in the treatment of which he completely succeeded by the mercurial plan.

When *dropsy* or a *true ascites* is connected with pregnancy, the treatment will require very serious consideration. If the degree of the abdominal distention is not incompatible with delivery, we shall remain satisfied to palliate the symptoms, and as much as possible to restrain the increase of the fluid.

This procedure is of course to be pursued independently of any consequences occurring after delivery, these remaining to be treated according to the circumstances which may then arise. If, however, the distention occasions great pain, and endangers the life of the patient, we cannot then wait for natural delivery; we must either bring on premature labour, or the operation of tapping must be performed. Dr. Denman's views on this subject display a timidity not in accordance with the general tenour of his opinions: he says, "if any active remedies are used for the cure of the dropsy, the child will of necessity be often destroyed, and an abortion or premature labour occasioned; and, when the operation of paracentesis has been performed, it has been known to prove fatal to mother and child, always reflecting great discredit, both upon the operator and the profession." It, therefore, seems necessary to establish this general rule, that no woman at a time of life, or under any circumstances which in the most distant manner subject her to a suspicion of pregnancy, should ever be tapped or otherwise treated for dropsy, till by examination per vaginam, or by waiting a due time,

we are convinced she is not pregnant, even though she may have before undergone the operation.

Burns says, "when dropsy is arising from the ordinary causes, or from disease of the liver, medicine has seldom much effect in palliating or removing the disease, and the woman usually dies within a week or two after delivery, whether the labour has been premature or delayed till the full time." Burns is of opinion, that if the distention be very great, especially at an early stage, a great part of the fluid may be safely drawn off after quickening, if during the operation, and afterwards, the abdomen be carefully and uniformly supported by a bandage. He thinks the operation is more likely to be succeeded by labour, if performed in the last month, than earlier.

A case of ascites, connected with uterogestation, most ably treated by Mr. Langstaff, is recorded in the twelfth volume of the *Medico-Chirurgical Transactions*. In this case, Drs. Farre and Davis having seriously considered the important nature of the disease, were of opinion, that the bringing on of premature labour was preferable to drawing off

the water. The unwieldy state of the abdomen, the inability to recline in the horizontal posture, and the immense size of the legs and thighs, rendered the patient indescribably miserable. The liquor amnii, in accordance with these opinions, was discharged; but on the following day, as there were no signs of labour commencing, and as dissolution appeared rapidly approaching, Mr. Langstaff cut down to the peritonæum, about two inches below the umbilicus, carefully perforating that membrane, with a moderate-sized instrument, such as is commonly employed in performing the operation of paracentesis abdominis. The fluid, which flowed very freely, was transparent, and when about ten pints of it had passed off, a moderately large, smooth, and soft elastic gum catheter was introduced through the opening, which, passing downwards for several inches between the anterior part of the peritonæum and uterus, drew off the remainder of the fluid, amounting in the whole to twenty-five pints. Three days after this operation, labour occurred, attended by no remarkable circumstance, excepting the detention of the placenta. In the interval between the tapping and the delivery, it was

found necessary to abstract fifty ounces of blood, twenty ounces being taken at one time, and thirty afterwards. In nineteen days after the labour, this lady was considered out of danger, and without any dread of reaccumulation of fluid in the peritonæal sac. In conclusion, Mr. Langstaff remarks, that from the favourable result of this and Scarpa's case (vol. 249 of the Quarterly Journal of Foreign Medicine and Surgery), he should be induced to recommend tapping before the hydropic symptoms became so distressing; and from what he has seen of dropsy, occasioned by plethora, or an inflammatory state of the arteries, he should expect that the further effusion of fluid into the peritonæal sac, during pregnancy, might, if detected before the accumulation was considerable, be prevented by blood-letting, and ultimately the absorbents might be induced by proper treatment to carry off the fluid. But this fortunate termination could only be expected where effusion was merely the result of simple inflammatory action, unconnected with visceral disease.

PART III.

PARTURITION IN ALL ITS VARIETIES.

CHAP. I.

SECT. I.—*Labour in all its Varieties.*

Having now completed the preliminary divisions of our subject, and trusting that although concisely they have been clearly and comprehensively treated, we shall at once proceed to the *practical* part of the science, *by which the truth and value of all its principles must ultimately be tried.* If hitherto we have endeavoured to select, from the general store of obstetric knowledge, what appeared to be fully known and established; so in this part, by far the *most important and responsible in midwifery*, we shall aim to present the rules of the art in as *simple and efficient*

a form as possible. Here we discover the improvement of the science, and we shall feel surprised, if we retrace its progress for the last 150 years, at the perfection it has attained. We think there are few, if any cases, excepting *anamalous* ones, which a practitioner may not be prepared at once to encounter; and if, with the information to be thus attained, he combine *judicious promptitude, tact, and delicacy*, there is no difficulty in believing, that he may practise midwifery with comfort and success. Let it however be remembered, that if, in the case of an important artery being wounded, it may be necessary for the surgeon *instantly* to exercise his anatomical knowledge and surgical skill; so in sudden hæmorrhage, occurring in parturition, if the *manner of procedure have not been previously arranged, the patient may die in the few minutes* required for deliberation.

The *term* of utero-gestation in the human species has been much controverted; a variety of causes has contributed to this difference of opinion; females on such subjects do not give precise and correct information; practitioners commence their calculations at different periods, some *immediately before*, others

directly after, the *last* appearance of the catamenia; while it is by far the most common to commence the reckoning *from a fortnight subsequently* to the last menstruation. We believe that few cases of pregnancy will be found to exceed *forty* clear weeks from the time of conception; although we are not disposed to acquiesce in the opinion recently delivered in the House of Lords, that the term of pregnancy cannot exceed 280 days, or ten lunar months. We find, in other points relative to conception, gestation, and parturition, an almost infinite variety; nor can we yet discover any facts irrefragably proving, that the general term of human pregnancy cannot be exceeded. We are fully aware that this question will not admit of decisive arguments from analogy, or these would favour the opinion to which we incline. We trust that future and more correct observation will determine this litigated point; not merely for the purpose of demonstrating who are right, but that in cases, where it is necessary to induce premature labour, we may do it with the utmost probability of preserving the life of the child. A few years since we attended a lady, who gave us the following particulars,

and on their accuracy we can rely. She ceased to be regular on the 25th of January; a few days afterwards her husband set out on a journey, and remained absent about six weeks; there was no return of the catamenial discharge, and she was not confined till November the 27th of the same year, a period probably of 304, but at all events of 300 days, from the last menstruation. This lady was unusually large, and her child much finer than any she had previously borne. Hippocrates extends the term of utero-gestation to ten months; and the Roman law, founded probably on the opinion of Hippocrates, allows ten months to ensue between the death of the husband and the legitimate birth of the offspring. France, we believe, has adopted this term; and Haller has furnished examples of pregnancy extending to eleven and even twelve months. Our own law has not prescribed any imperative rule on this subject, preferring rather to be guided in its decisions by facts, which, in the opinion of those most capable of estimating their value, may influence individual cases.

Dr. Merriman, the author of a valuable work on difficult parturition, has bestowed

considerable attention on this subject. He informs us, " that he is very exact in ascertaining the last day on which any appearance of catemenia was distinguishable, and has reckoned forty weeks from this day, assuming that the two hundred and eightieth was to be considered as the legitimate day of parturition. Of the births of one hundred and fourteen mature children, calculated from, but not including the day on which the catamenia were last distinguishable,

3 occurred in the 37th week.

13	-	-	38th.
14		-	39th.
33	-	-	40th.
22	-	-	41st.
15	-	-	42nd.
10	-	-	43rd.
4	-	-	44th.

The position of the child in utero has been variously described ; it used formerly to be thought, that it sat or rested with the breech on the brim of the pelvis, the foreparts of the child being turned towards the abdomen of the mother. Before the different stages of labour were correctly understood and de-

scribed, it was believed, that at the time of parturition, principally by its own weight, the head descended into the cavity of the pelvis, in such a direction, that its vertex was turned towards the ossa pubis, and its face into the hollow of the sacrum. Harvey investigated the position of the fœtus in utero with great care, and we shall present his account to our readers, premising that the arrangement of its parts is such as to occupy the least possible space, affording the utmost facility to its own movements, and as little inconvenience as possible to its parent. We may also remark, that it is highly probable, its situation remains the same during the whole term of gestation; so that, if the head lie over the centre of the pelvis in the commencement, it will generally be so situated at the termination of pregnancy, unless there have been any violent actions or movements on the part of the mother.

The general position is as follows:—the knees are drawn up to the belly, the legs are reflected backwards, the feet crossed, and lying close to the breech; the elbows are in contact with its sides, and the hands turned up to its head, one of which is often placed

upon the cheek or ear. The spine is incurvated, and, the neck being bowed, the chin rests upon its knees. There is that inflexion of the body into which we spontaneously fall, when we seek repose; and, as it is our position before we are born, it is that also to which we have an inclination in the decrepitude of old age. *Adductis ad abdomen genibus, flexis retrorsum cruribus, pedibus decussatis, manibusque sursum ad caput sublatis, quarum alteram, circa tempora vel auriculas, alteram ad genam detinet, spina in orbem flectitur, caput ad genua incurvato collo propendet; tali membrorum situ, qualem in somno quietem quærimus.—Harv. Exercitat. de partu.* The bulk of the body of the child is not placed against the spine, but on one side, most commonly on the right, and the limbs are turned towards the left, so that the abdomen of a pregnant woman is in general, evidently distended more on one side than the other. No suspicion need in consequence be entertained that the presentation at the time of birth will be unnatural.

Before we commence the history of labours, in order to simplify and facilitate the comprehension of them, they may be divided

into classes and orders, bringing together *those which agree in some essential particulars, and which require nearly the same treatment.* By this method we shall be able to convey the practical precepts of the art with perspicuity and force. The term labour is not solely applicable to human parturition, as it may express any act performed with difficulty and pain; we cannot, however, controvert the peculiar propriety of its employment to characterize the whole of this momentous process, the circumstances of which it is well suited to describe.

CLASSIFICATION OF PARTURITION.

CLASS I.—NATURAL LABOUR.

CLASS II.—DIFFICULT LABOUR.

CLASS III.—FLOODING LABOUR.

Annexing, as *exceptions* to Natural Labour, those *complicated* and anomalous circumstances which have generally constituted a distinct class.

CLASS I.—*Natural labour*, may be defined, that which is occurring at the full time, the head of the child presenting, and the process being completed within twenty-four, or twelve, or frequently within six hours, without artificial aid, or the occurrence of any morbid affection. This comprises three orders.

Order 1.—*Quick labour*, occurring by far the most frequently, in which the process is easily completed within the prescribed time.

Order 2.—*Lingering labour*, the head of the child still presenting, but continuing beyond twenty-four hours, instrumental aid *not* being required.

Order 3.—*Twin labour*.

CLASS II.—*Difficult labours*, or those in which the child may or may not present the head, and where the natural powers are *generally* insufficient to accomplish the delivery. This comprises three orders.

Order 1.—Presentation of the breech, of the superior or inferior extremities, or any combinations of these presentations, and which require *manual* aid.

Order 2.—Labours which cannot be completed *without the aid of extracting instruments*, of which some are designed to save the lives *both of the mother and the child*; while others are intended to preserve *the life of the mother*, at the expense of *the life of the child*.

Order 3.—*Impracticable labour*, or that in which the child, even when as much as possible reduced in size, cannot pass through the pelvis, and where the *Cæsarean* operation becomes necessary.

CLASS III.—*Flooding labour*, including the *earlier* and *later* hæmorrhages attendant on gestation as well as parturition.

CLASS I.

NATURAL LABOUR.

It is very important to obtain clear and precise ideas of the progress and circumstances of natural labour; for if we have a standard pelvis and a standard head, of which all other pelvises and crania may be considered only as varieties; so natural labour may form a *standard*, to which all others, in a greater or less degree, must approximate, *their safety or danger* being correctly estimated *by their likeness or dissimilarity* to natural parturition.

Thus if any of the marks in the definition of natural labour be wanting, it must come under some other class. If, for instance, the head is not the presenting part, it must be placed in the class of difficult labours; and, if manual aid be required, it will form part of the first order of this class. Again, if the head should present, and convulsions should occur, it may still be ranked under natural labour; but it will constitute one of the most

dangerous complications annexed to that class. "A natural labour was the last thing well understood in the practice of midwifery; because scientific men, not being formerly employed in the management of common labours, had no opportunity of making observations upon them. Practitioners were then engaged in qualifying themselves for the manual exercise of their art, whenever they might be called on to give assistance; and not in making nice distinctions, or investigating the particular cases in which it might be necessary to exercise it."

Dr. Smellie supposes that, out of one thousand women in labour, eight shall be found to require instruments, or to have the child turned in order to avoid them; two children shall present the superior extremities; five the breech; two or three the face; one or two the ear; and ten shall present with the forehead turned to the acetabulum.

Dr. Bland says that, of one thousand eight hundred and ninety-seven women, one thousand seven hundred and ninety-two had natural labour. Sixty-three, or one out of thirty, had unnatural labour; in eighteen of these the child presented the feet; in thirty-

six the breech ; in eight the arm ; and in one the funis. Seventeen, or one out of one hundred and eleven, had laborious labour ; in eight of these the head of the child required to be lessened ; in four the forceps was employed ; and in the other five the face was directed towards the pubes. Nine, or one in two hundred and ten, had uterine hæmorrhage before or during labour. It is evident that this register cannot form a ground for general calculation ; and we perceive that the number of crotchet cases exceeds those requiring the forceps, which is not observed in the usual cases of practice.

We cannot form any correct opinion from the practice of individuals, as some may, from peculiar circumstances, encounter more of difficult midwifery than is fairly proportioned to the number of their patients. Thus Dr. Hagen of Berlin says that, out of three hundred and fifty patients, he has employed the forceps ninety-three times, and the crotchet in twenty-eight cases ; twenty of his patients died. Dr. Dewees of Philadelphia, says that in more than three thousand cases he has not met with one requiring the use of the crotchet.

SECT. I.—*On the Changes immediately previous to Parturition.*

Many hypotheses have been proposed to explain the phenomenon why labour should so unvaryingly occur at the expiration of forty weeks? Into these we shall not enter, as we know scarcely any thing of the circumstances which exist between the uterus and the child, rendering the contraction of the former necessary at this period. The most natural supposition would ascribe to the developement of the fœtus the necessity for this action, but yet we are informed, that in cases of extra-uterine conception, at the expiration of nine months, the uterus is thrown into contraction, similar to that which is produced by the residence of the fœtus within its cavity. It is, however, true, that at the expiration of the above-mentioned period, changes occur, which intimate pretty clearly, that some important process is about to be commenced; and these changes have been denominated the predisposing signs of labour.

There is at this period, *a partial subsidence of the abdominal enlargement*, arising from the forcing *downwards* of the uterine contents, by the *contraction* of the fundus; and many women are able correctly to foretel, from this circumstance alone, the early occurrence of labour. Whenever the fundus of the uterus is thus descending, it indicates a favourable disposition to parturient action, and perhaps a good formation of the pelvis; for if, after the commencement of labour, the patient complains that the child is very high, it is unfavourable, indicating perhaps either that the *fundus* is *inactive*, disposed to act *irregularly*, or that *some pelvic obstacle* may exist. Patients, who have previously borne children, often predict with great accuracy, the early or late coming on of labour, from the occurrence of circumstances and sensations which are unintelligible to any other individuals.

The follicular apparatus about the neck of the womb is now pouring out a *glairy* and *viscid* secretion; which, when it immediately precedes labour, and from the rupture of some small vessels is of a sanguineous colour, we denominate *shew*. Some women,

from their manner of walking at this period, and from the statement of their feelings about the pelvis, would induce the belief, that there was some relaxation of ligaments, and that the popular expression of falling in pieces, is not altogether unjustifiable. These changes are often accompanied *by irritation of the bladder, and by griping tenesmic sensations* in the intestines and rectum. These are the principal circumstances inducing the belief, that the expulsatory action of the uterus is about to commence; and, in the language of old Avicenna, that the “appointed time having arrived, labour comes on by the command of God.”

SECT. II.—*Delivery.*

It is scarcely necessary to remark that in the term delivery we include the complete expulsion of the fœtus and the secundines; but as there are certain parts of the process which are distinct, and as protracted intervals may occur between them, we shall consider parturition as divided into *three* stages; the

First stage, terminating with the complete expansion or dilatation of the os uteri, the rupture of the membranes, and the discharge of the waters; the

Second stage, including the complete expulsion of the child; and the

Third, which we regard as most important, terminating with the detachment and expulsion of the secundines.

In the first stage of this process, our interference is not frequently necessary: in the second, we may have to put in practice the difficult, yet almost certainly efficient rules of the art; but in the last stage of parturition,

when danger from flooding arises, the life of the mother will *almost entirely depend on the knowledge and promptitude of the medical attendant*. It is a rule in midwifery, to see a patient about to be confined, as early as possible ; for there may be a preternatural presentation ; and from the rupture of the membranes and the escape of the water, the favourable moment for turning may be lost, previously to the arrival of the accoucheur. Flooding may also endanger the life of the patient ; and, in presentations of the feet, the expulsion of the child may have been so far accomplished, as that its head and body being retained within the uterus, pressure on the umbilical cord may destroy the life of the child, when prompt and early obstetric aid might have preserved it. We should advise every accoucheur to carry about him the tincture of opium, a catheter, a tracheal pipe, and of course, a lancet. It is scarcely necessary to illustrate this advice, by pointing out the various circumstances in which their employment may be required. Opium is invaluable in allaying the irritability produced by false or spasmodic pains ; and every one is aware of the relief it affords in those necessary contractions of the uterus

occurring after almost every labour, with the exception of the first. No one would employ obstetric instruments, without previously ascertaining the state of the bladder, and this viscus is generally loaded with urine in difficult parturition. Where the os uteri is rigid, and the patient robust and plethoric, the abstraction of sixteen ounces of blood at the commencement of labour, is frequently attended with marked benefit. The tracheal pipe is of great value in resuscitating the child, all other means being decidedly less efficient for this important purpose.

We have already alluded to certain changes indicative of approaching parturition; on these presumptive signs, however, we cannot give an opinion that the process has commenced; to do this with certainty, we must examine per vaginam, which at the time of labour, is denominated "taking or trying a pain." Women will scarcely ever allow this examination, till they are convinced that labour has actually commenced; and then they are solicitous to be informed of its progress, and the probable period of its termination. The position in which this enquiry, and indeed the delivery is conducted, varies

amongst different nations, and in different districts of the same country. The German ladies are delivered while sitting, so that the full effect of the pains is exerted on the child's head, over the centre of the os uteri. In Ireland, they are frequently placed on the knees and elbows. But, in our own country, women generally repose on the bed upon their left side, with their knees bent, and drawn towards the abdomen, which is sufficiently convenient for all common purposes. This examination is to be conducted with delicacy and tenderness, as an unfavourable opinion of the accoucheur's skill and kindness, may retard the progress of the labour. We have already enforced a prompt attendance on a parturient patient, and it is not less desirable that we should, at an early period, ascertain the presenting part of the child, and its relation to the pelvis. We shall thus satisfy ourselves whether a woman be really pregnant, whether labour has really commenced, and if there be malposition of the head, or any disease, either of the uterus itself or of the neighbouring parts, we may, without hesitation, or loss of time, adopt the proper treatment.

I was once sent for to a case, where the accoucheur had been up two nights, expecting the birth of the child, and, on examination per vaginam, the uterus was found in its unimpregnated condition, the abdominal intumescence having arisen, partly from aërs and partly from air. Dr. Blundell also relates a case of this kind, attended by a most unfortunate result, where, on examining the abdomen after death, the peritonæum was found full of water, but the womb, clearly unimpregnated, was no bigger than a pear; and “thus it sometimes happens, that we are called to expected deliveries, when the patients are not even pregnant; and it is, therefore, one office, which, in natural labour, devolves on the accoucheur, to decide in dubious cases, whether pregnancy exist or not.”

The *first* stage of labour is generally ushered in by *frequent short* pains, arising from the resistance opposed to the contractile efforts of the uterus. They are principally confined to the back and loins, and may be regarded as chiefly produced by the *dilatation* of the os uteri. The *cutting* and *grinding* sensations accompanying them, are sometimes peculiarly distressing, and the patient ex-

presses her uneasiness by restlessness and moaning. The *false* or *spurious* pains commonly occur previously to the full establishment of genuine parturient effort, and as they occasion solicitude and excitement, without at all advancing the progress of the case, they should be distinguished from the true pains of labour. They arise from several causes, *intestinal* irritation being perhaps the most constant, they affect any and all parts of the abdomen, and are unconnected with real *uterine* contraction. Unloading the bowels by a mild aperient clyster, gentle friction of the painful part, and the subsequent exhibition of a dose of opium, will generally suffice for their removal. *Rigors* and vomiting often accompany the first contractile efforts, and, where they are not inordinately *severe* and *protracted*, they are favourable, requiring no other treatment than simple warm dilutents. These *dilating* pains gradually increase in force, until there is scarcely a well defined interval between them. Relaxation of the uterine fibre alternates with its contraction; and the membranes which during pain are tense, on its cessation become flaccid and retreat some-

what considerably into the uterine cavity. At length, they are forced through the os uteri, and protrude into the vagina, and assuming the form and properties of a wedge, by slow degrees, they accomplish its entire expansion, so that the uterus and vagina form one *continuous* passage. The pains now alter their character and become *expulsive*, or as they are commonly termed *forcing* or *bearing* down pains ; and, instead of affecting the back only, they extend to the lower part of the abdomen, the vagina, and thighs. Every paroxysm is attended by a sensible advance of the uterine contents, till the membranes are ruptured, and the liquor amnii escapes ; the head, at the same time, as represented in plates 1 and 2, *entering the brim*, and descending *into the cavity of the pelvis*. There is at this period very little interval between the pains ; they augment in frequency, force, and duration ; propelling the head through the vagina, and causing it to press upon and distend the perineum. The *dilatation* of the *perineum* is gradually accomplished, and when complete, it allows the forehead, face, and chin to pass over it, while the occiput emerges from under the *arch* of the pubis, thus finishing the

birth of the most important part of the child. Little more remains to be added to this brief description of natural labour. On the exit of the head the shoulders occupy the cavity of the pelvis ; they advance with their long diameter, opposed to the long diameter of the brim, until being arrested by the projecting processes of the ischium, they follow a turn, similar to that previously described by the head, and emerge, the one shoulder sweeping the hollow of the sacrum, and distending the perineum, the other passing out from under the arch of the pubis. The remaining parts of the body generally enter the world immediately after the shoulders. It may so happen, that the placenta shall be thrown off, immediately after the extrusion of the child, although the uterus generally remains at rest for fifteen or twenty minutes before the occurrence of this event. It will be perceived by any one who reflects on the simple and admirable process of natural labour, that it depends almost entirely for its safe termination on the *consecutive* developement and influence of the structures and power employed, and that any hasty and injudicious

interference invariably delays its progress and hazards its prosperous result.

It is of extreme importance that the mechanism of natural labour, or rather the *precise course taken by the child's head* in passing through the bony canal of the pelvis, should be well understood; as it will be vain to expect the efficient management of a bad presentation of the head, when its simplest and most natural mode of transition is imperfectly known. We are well aware, that many practitioners deem this knowledge superfluous, as if the head do but present, they trust implicitly to the natural powers for its delivery, thus not unfrequently condemning their patients to hours of suffering, which a slight acquaintance with the principles on which natural parturition is conducted, would have been amply sufficient to prevent. In the most common presentation, (vide plate 1,) or that in which the posterior part of the head places itself behind the left acetabulum, and the anterior fontanelle before the right sacro-iliac symphysis, the reiterated action of the uterus, forces down the vertex, in the axis of the brim of the pelvis, lower

than any other part of the head, and necessarily fixes the chin upon the breast, one most auxiliary circumstance in the future progress of the labour. - The head continues to descend in this doubled position, its *long axis* corresponding with the *diagonal* or *longest* diameter of the pelvis, till its further advance is opposed by the *sacro-ischiatic* ligaments, *by a portion of the promontory of the sacrum*, and by the *spinous* processes of the ischium.* Having now reached nearly to the *outlet*, at least being fully engaged in the *cavity of the pelvis*, (vide plate 2,) that *turn* is effected which brings the occiput under the arch of the pubis, and throws the face into the hollow of the sacrum. This sweep or pivot-like motion being accomplished by

* Vide Dr. Conquest's valuable Outlines of Midwifery. "If the form of the spinous processes of the ischia be recollected, it will be evident that the occiput having a tendency to turn forwards by the position of the head, on its descent into the cavity of the pelvis, will be assisted in effecting this course by the unequal pressure of the processes of the ischia on the sides of the head; for while one spinous process presses on the edge of the parietal bone next the forehead, the other is pressing on that edge of the opposite bone which is nearest the occiput, so that the apex of the occipital cone necessarily passes under the arch of the pubis."

the flexibility of the cervical vertebræ, and may perhaps be estimated at the sixth or eighth of a circle. As the head continues to be urged *downwards* and *forward*, the chin of the child (vide plate 3), begins to separate from the breast, and the labia are widely divided by the advancing vertex. The pains increasing in power, carry forward the occiput under the *arch of the pubis*, and the forehead, face and chin pass out *over the perineum*.

It is important to bear in mind, that from the shallowness of the pelvis at the pubes, the posterior part of the head is often felt at the orifice of the vagina, before the turn is completed, and when the ear is still at the brim. The head, while its long diameter lies diagonally, descends in the axis of the brim or downwards and backwards, but when the turn is completed, its passage is in the axis of the outlet, or downwards and forward. These facts are of moment in rendering either manual or instrumental aid. A slight degree of narrowing in any part of the pelvis, more especially any contraction at the brim, or any undue projection of the sacrum, will delay the descent of the head and

obstruct the completion of the turn. If, under these circumstances, the force of the pains continue, the shape of the head will be altered; the integuments will be tumefied, and sometimes there will be an effusion of serum between them, thus greatly disfiguring the presentation. Here it is manifestly incorrect to judge of the situation of the head, by the position of the apex of the tumour, formed by the scalp; and the ear alone, if it can be felt, will enable us to form a right opinion. Baudelocque aptly observes, that at all periods of labour the head presents its smallest diameters to the pelvis, and that it passes through it, presenting only its smallest circumference. That it executes three different motions in its passage, that of flexion forward in the first period; the pivot like, or rotatory motion in the second; and lastly, that of flexion backward, at the time it disengages itself from under the arch of the pubes.

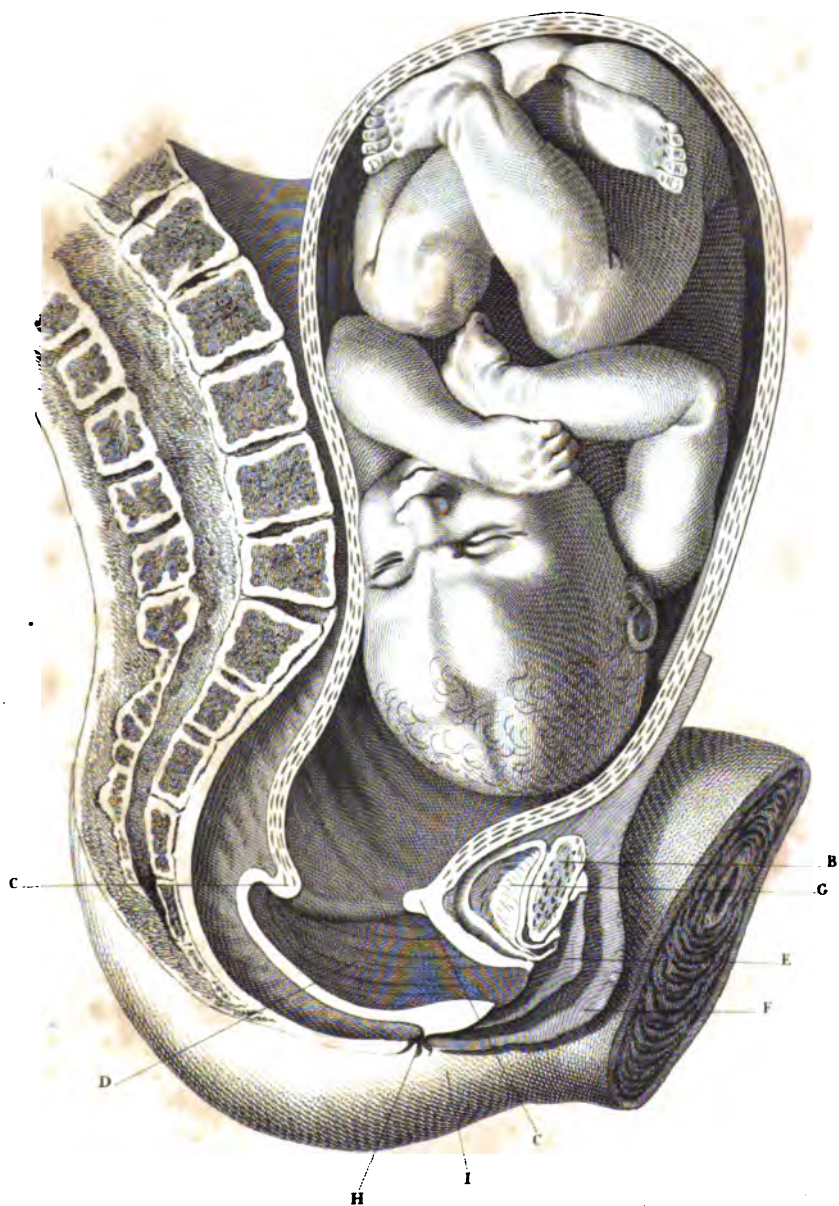
PLATE I.

This plate and the two succeeding ones accurately display the position of the *child's head at the brim, its passage through the cavity, and its exit at the outlet of the pelvis*: they are, therefore, fully explanatory of the course taken by the head of the child in natural labour.

They are reduced from the large and beautiful plates of Smellie.

- A. The *last dorsal vertebra*.
- B. The *os pubis* of the left side.
- C. C. The *os uteri*.
- D. The *vagina*.
- E. The *left nympha*.
- F. The *left labium pudendi*.
- G. The remaining portion of the bladder.
- H. The *anus*.
- I. I. The left hip and thigh.

This figure represents the *natural* position of the child at an early period of labour, or that which, from the frequency of its occurrence, may be denominated the *best* or *standard* position.



Engraved by J. Smith del.



Engraved by J. Stewart, Senr

London, Published 1814, by Tho: Tegg & Co, Strand

The long axis of the head, stretching from the chin to the vertex,* is here *diagonally* or *obliquely* situated, corresponding with the *longest* diameter of the brim; or, in other words, the posterior fontanelle is *behind* the left acetabulum, and the forehead *opposite* the *right* sacroiliac synchondrosis.

So soon, as from the entire or partial evacuation of the liquor amnii, the uterus, as here represented, comes into contact with the body of the child, the direction of the course taken by the head is *posteriorly* in a line towards the sacrum, or in the *axis of the cavity of the pelvis*.

PLATE II.

Represents the head of the child after it has passed the brim, *fully engaged in the cavity of the pelvis*. The head has advanced thus far without any serious obstacle, but its further descent is resisted by the sacro-ischiatic ligaments,—by the spinous processes

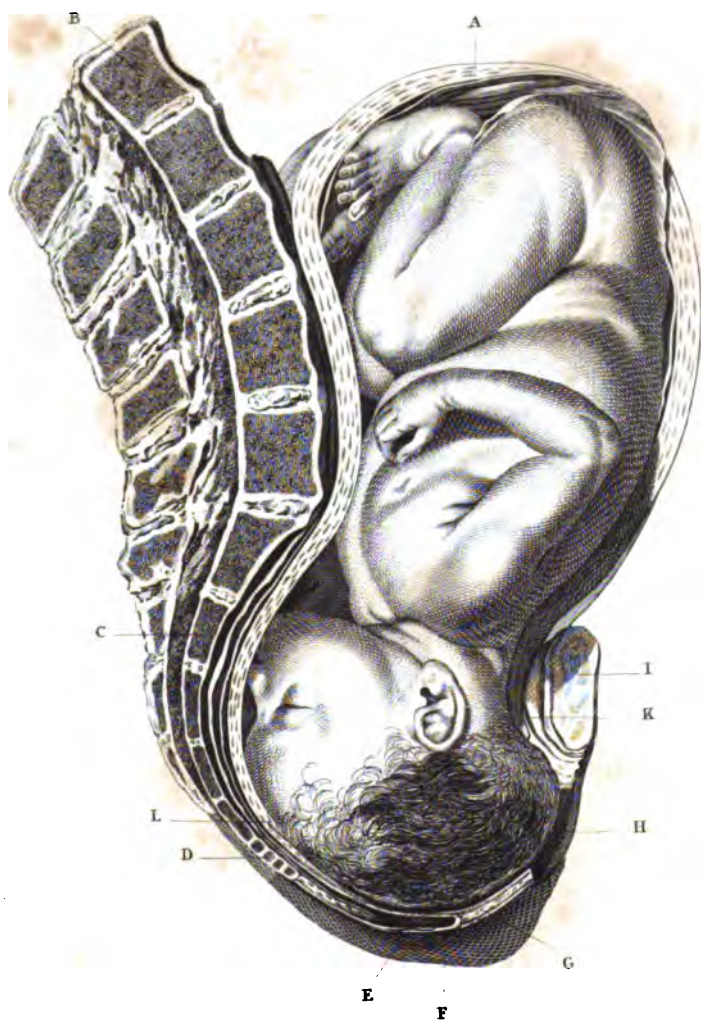
* By the *vertex*, we mean that part of the child's head, where the hair diverges, as from a central point, a little more in advance towards the summit of the cranium than the posterior fontanelle.

of the ischia,—and by the shoulders of the child, which at this time have their longest axis opposed to the shortest diameter of the brim of the pelvis; that is, to the promontory of the sacrum and the symphysis pubis.

- A. The uterus a little *contracted* and *thicker* from the partial escape of the liquor amnii.
- B. The anterior-superior-spinous processess of the ilia.
- C. The inferior part of the rectum.
- D. D. The *vagina* largely stretched.
- E. E. The *os uteri* fully opened.
- F. A portion of the placenta.
- G. G. The *membranes*.
- H. H. The *ligamenta lata*.
- I. I. The *ligamenta rotunda*: both these are stretched upwards with the uterus.

PLATE III.

Represents the *turn* fully effected: at the brim of the pelvis, the long diameter of the head was situated *diagonally*, or from *side* to *side*, an arrangement necessary to secure the *best* adaptation of parts. At the *outlet*, to



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accomplish the same important purpose, the position of the head is *turned* or *changed*, so that its long diameter is from *before backwards*, or between the os pubis and os coccygis. In the last plate, the *long* axis of the shoulders was opposed to the *shortest* diameter of the brim of the pelvis; the *turn* rectifies this incommodious position, and so places them, that their *long* axis corresponds with the *long* diameter of the outlet, that is, from *before backwards*.

The necessity for these changes is further developed in the section on the passage of the child's head.

A. The *uterus* contracted closely to the foetus after the evacuation of the liquor amnii.

B. C. D. The *vertebræ* of the loins, *os sacrum* and *coccyx*.

E. The *anus*.

F. The left hip.

G. The *perineum*.

H. The os externum beginning to dilate.

I. The *os pubis* of the left side.

K. The remaining portion of the bladder.

L. The posterior part of the *os uteri*.

SECT. III.—*Observations on natural labour.*

We believe, in a state of nature, there is very little solicitude entertained, and very little preparation made for delivery. We find, from the accounts of various authors, that a seclusion of a few hours in some retired spot, or in a rudely constructed hut, is all which women living in a state of natural simplicity require for the completion of their labours; and after some slight ablutions, if religious custom does not demand their separation, they almost immediately return to their usual mode of life. In countries where a high degree of civilization prevails, and especially in Europe, parturition excites much attention, and is conducted with great care. Some patients prefer being delivered on a couch or bed, distinct from that on which they are afterwards to sleep, a manifestly undesirable arrangement, as their removal after labour, especially if it has been severe, may be attended with fatal

syncope or alarming hæmorrhage. The bed is to be guarded; and this will be best effected by laying a large skin of red leather on that part of it where the hips are placed, and over this one or two blankets, or two or three sheets, so folded as to form a mass, which may absorb any fluid discharged during the labour; over these, spread out another sheet, which, if fastened to the bed-posts, will keep the whole apparatus in its proper place. The lying-in room should be kept cool, and the nurse and one or two female friends are sufficient for every purpose. Whispering, and indeed every circumstance calculated to excite alarm and apprehension, of which parturient women are extraordinarily susceptible, should be avoided. There is no reason why simple and nutritious food should be forbidden: stimulants and spice are injurious, excepting when the labour is tedious, and when exhaustion is delaying the delivery, in which case wine alone, or wine and water, according to previous habits, may be allowed. Sleep should be encouraged in the intervals of pain; and cheerful lively conversation is productive of good.

The first stage of labour is generally the most tedious, and during the cutting and grinding pains the patient need not be confined to the bed; she may walk about the room, and place herself in any posture which is most easy. Under these circumstances, there is seldom much difficulty to determine whether labour has really commenced; the greater difficulty is, to give a correct opinion as to the time which may be required for its completion. For this latter purpose, great judgment and experience are required, and even when these are fully possessed, it will be better, while we are careful not to discourage the patient, to lean rather to the side of doubt than of confidence. We may observe here, without attempting any explanation of the fact, that labours do sometimes seem to proceed in regular periods of time; so that a labour which commenced at twelve o'clock at night, if not terminating at noon the next day, will frequently continue till twelve o'clock the next night. The remark is almost proverbial, that uterine operation is suspended through the day, more especially in summer, to be again resumed during the night.

If it be really important to say precisely whether labour has begun, and to afford encouragement as to its progress, we must not form our opinion from the mere openness or relaxation of the os uteri, during the absence of pain, but from the degree of dilatation which its accession and continuance really produces. In cases where labour has been suspected, and where we have been allowed to examine, we have frequently found a considerable degree of relaxation, even where labour did not occur for some days or even weeks afterwards. Supposing the pains to continue, we may easily ascertain the extent to which the os uteri is affected ; for if, from a degree of dilatation, scarcely sufficient to admit the tip of the finger, the pain induces such uterine contraction, as shall enlarge its disc to the size of a shilling, and by a few succeeding efforts to that of a dollar, we can entertain no doubt, that the labour is really begun. If additional certainty be desired, the state of the membranes, during pain, will afford some criterion. If, from being flaccid, they become tense, and are protruded downwards, we may feel certain of the commencement of labour. If the membranes are rup-

tured, the same observations may be made on the head, which will advance and retreat during the pressure and inactivity of the uterine effort.

It is worth while to remark, that women, especially if they have once gone through a difficult labour, will anxiously enquire "if it be all right;" in other words, if the head be the presenting part; now, although this knowledge cannot always be obtained in this early stage, we may sometimes succeed in passing one or two fingers into the mouth of the uterus, and, through the membranes, distinguish the presenting part. If we fail, we may insinuate the fingers between the os uteri and the symphysis pubis, and if the vertex be presenting, we shall easily feel it behind and above the ossa pubis. In this stage, the practitioner should occasionally leave the room, to afford an opportunity for evacuating the bladder and rectum, nor is there any necessity to examine frequently, as the head cannot be expelled till the os uteri is dilated. Afterwards, however, when the head is advancing towards the outlet, we must frequently inform ourselves of its progress, and prevent, as much as possible,

that restlessness and irritability of the patient, which, even under Dr. Denman's management, was once the cause of laceration of the perinæum. Cramps, which are occasionally arising from pressure on the obturator and sciatic nerves, are favourable, inasmuch as they indicate the rapid descent of the child through the pelvis. Vomitings, shiverings, and rigors, are often occurring during the dilatation of the os uteri; and, as they are proofs of the sympathy of the system with the uterine action, they need not excite alarm. It is seldom necessary to employ any remedies for their removal: if the vomiting be severe, the saline effervescent mixture may be given with a few minims of the tinct. opii; and if symptoms of pyrexia, with affection of the head, follow the rigors, more especially if the pulse be high and the arteries about the head throb, the abstraction of sixteen, twenty, or even five-and-twenty ounces of blood from the arm will be desirable.

A diversity of practice has obtained in the management of the membranes; some practitioners invariably leaving their rupture to the natural efforts, while others as invariably break them by artificial means, so soon as they are within reach, and before the dila-

tation of the os uteri is fully accomplished. Of the latter practice we do not approve; the rule should be, to leave their rupture to the natural efforts; the exception, to produce it by artificial means. There are two instances in which the rupture of the cyst is fully justifiable; first, when at the sixth or seventh month, there is an attempt to throw off the ovum entire and unbroken, in which case there might be most alarming hæmorrhage from the placental vessels, and the fœtus might probably be drowned in its own waters. And again, when the membranes are unusually tough and unyielding. Here we have known labour delayed several hours from an unwillingness to interfere with its natural progress. If, however, we find the membranes pushed down along the vagina, and protruding beyond the vulva, we may feel assured the os uteri is fully expanded; and we cannot err, if during the height of a pain, we force a stilette through the cyst, after which the child will sometimes be almost immediately born. Supposing the membranes to have been ruptured, and the liquor amnii to have escaped, the first stage of parturition is completed, and the very important duty of ascertaining the presentation devolves upon the accoucheur. It may

be true, in labours generally, and the remark is not rare in relation to the whole of obstetric practice, that it is of very little importance whether we know the presentation or not, as it is most commonly a natural one, and the birth will safely occur independently of our assistance. But this does not always happen; the child may lie unfavourably; the aid of a skilful practitioner may be required, and complete success will very much depend on the bestowment of that aid before the uterus has fairly contracted itself round the body of the child. We cannot, therefore, be too particular in promptly ascertaining the presentation. When the head has passed through the os uteri, and the pains continue forcing and powerful, we must carefully watch its progress, lest by the suddenness of its protrusion the perinæum may be lacerated.

In first labours, and where there is a rigid unyielding condition of the softer parts, the protection of the perinæum is of great moment. It is not perhaps possible, and if it were so, it is not desirable, *forcibly* to prevent the descent and expulsion of the head; as rupture of the uterus may occur if the birth be too long delayed. Laceration of

the perinæum, however, it must be allowed, is most frequently happening, from the premature and sudden propulsion of the head through the external parts, previously to their complete dilatation, when the perinæum is thick and rigid. We may add to this cause, the voluntary force, or bearing down the pains, so common at the time of parturition, in the performance of which women sometimes exert a considerable degree of voluntary power, often indeed their whole strength, with the hope and intention of finishing their labours speedily. This accident therefore rarely happens in very slow or difficult labours, whatever may be the size or position of the head of the child. It is generally recommended, when supporting the perinæum, to interpose a soft, napkin between it and the hand; from this injunction we dissent, as it is manifest if the napkin be three or four times doubled, and it cannot very well be less if it afford any soft, cushiony support to the part, the accoucheur must be in ignorance as to the precise condition of the perinæum; it may or may not be in a fit condition to allow the passage of the head: laceration almost invariably occurs, not because the head is too large, or from its

passing in any particular direction, but because it passes too speedily or presses, as we have before remarked, too violently or suddenly upon the undilated parts: of all these circumstances, the naked palm of the hand will enable us to judge much more correctly than if a napkin be interposed. Lard or pomatum may be largely employed, as they not only lubricate the parts, but diminish the sensations of heat and tension. We have seen one case of laceration, arising from this want of correct information, the head passed down to the outlet suddenly, the attendant immediately supported the perinæum by a soft napkin; the perinæum was lacerated, and the child immediately thrust into the world.

The cure of a lacerated perinæum is very tedious; and, although no danger arises from the accident, yet if it divide the partition or septum between the vagina and rectum, the patient is rendered truly miserable; for, having little or no power of retaining her fœces, she cannot go into society. Sutures have been advised in the treatment of lacerated perinæum, it being supposed that the parts might be retained in apposition sufficiently long, to establish firm union be-

tween them: they have not been attended with success, as the ligatures have sloughed away, and the patient has been left in a worse condition than before. We have seen two instances of lacerated perinæum, and in one, where the rectum and vagina communicated, we induced tolerably firm union in six months; quite enough to enable the lady to retain her fœces, and to perform her usual duties. This lady maintained the recumbent position, with the thighs closed during nearly the whole of this time; the wound being occasionally touched with the argenti nitras and the nitric acid lotion. Eighteen months after the occurrence of the accident she was again confined; and, although there was a good deal of relaxation about the parts, they did not separate: since this period no inconvenience worth mentioning has been experienced.

The child generally comes into the world with the occiput forwards and the face posteriorly; and when it has fully emerged, there is no necessity to hasten, by any efforts of ours, the expulsion of the shoulders. We ought ever to bear in mind, that the less we interfere in natural labour the better. The ordinary efforts, in eight cases out of ten, will

expel the shoulders, and the uterus will contract itself more regularly and effectively, and the placenta will be much more safely and quickly detached, where no attempts at extraction have been made. In the little interval which thus occurs we may examine whether the navel-string be round the neck of the child; and, where it is so, we may generally succeed in disentangling it, by gently drawing down another portion of it, and then passing it over the chin and face, thus setting it at liberty. If, as in an instance which lately occurred to us, the cord be coiled round the neck five or six times, although the birth may be a little delayed, we had better defer any attempt to disentangle it till the child is born, when it may be untwisted with the utmost facility.

In bringing away the child its abdomen should be kept, as nearly as possible, to the external generative organs of the mother. The reasons for this procedure are obvious. The cord, although usually two feet in length, may be preternaturally short; and were the child to be suddenly removed to some distance from the mother, the womb might be inverted, or the placenta partially detached. Both

these events are obviated by an observance of the above rule. When the child has cried, the first thing to be done is to tie the cord. This may be accomplished by a broad ligature, composed of coarse thread or silk, several times doubled; for if the "navel-strings," as they are termed, be made only of a few threads, they may cut the funis, giving rise to a fatal hæmorrhage. It is usual to apply the first ligature at a distance of three or four fingers' breadth from the umbilicus; first making a single knot, and having passed it round the cord in the same crease twice more, we may conclude by a double knot, firmly and tightly made. The second ligature is one of minor importance, and on the Continent is seldom used; it may be applied at two or three inches distance from the former, nearer to the placenta, and a single knot will suffice. In afterwards dividing the cord, by a pair of scissors, between the two ligatures, we must be careful not to cut it too near the first, as the ligature may afterwards slip, and endanger the life of the child. We wish to observe that when the child has cried vigorously, and moves about powerfully, we need not hesitate immediately to apply the liga-

ture; if, on the contrary, its breathing is imperfect, and scarcely perceptible, from whatever cause it may proceed, we should defer the application of the ligature, and afford it the advantage of the placental circulation, till, by the warm bath and artificial respiration, we have fully established its independent vitality.

Before we attempt the delivery of the placenta, which constitutes the principal duty of the third and last stage of labour, we should ascertain whether there are any more children. This may be done by laying the hand upon the abdomen, and gently grasping its contents; if there be no other child, we shall find the abdominal parietes soft and flaccid, while the uterus, now become a circumscribed, hard body, like a child's head, will be felt in the centre. Under this state of the uterus, we need not hesitate to deliver the placenta, more especially as it will generally be found lying in the vagina. We may lay hold of the funis by the left hand, and passing up one or two fingers of the right, to the insertion of the cord, we gently draw down, and we shall soon find the placenta passing through the os externum. Some practitioners

are very particular in their directions about the membranes, and we invariably attempt, by a *very gentle* withdrawal of the placenta, to insure the complete extraction of the secundines; thus obviating the subsequently painful contractile efforts to expel them, and at the same time removing a source of annoyance, in the offensive smell, to which, by their putridity they may give rise. The bandage contrived by Mr. Gaitskell of Rotherhithe, which we have used, or a long towel, may be applied round the abdomen so firmly, as to give a feeling of support, and, if there be any faintness or exhaustion, a few spoonsful of brandy and water, flavoured with spice, may be given.

Children, though not dead, are sometimes still born, or they are incapable of crying, and of manifesting other indications of vitality. This effect is generally produced by pressure on the umbilical cord, or, where the head has been long jammed in the pelvis, it may arise from compression of the brain. Three modes of resuscitating the child, when still born, have been proposed: pressure on the chest, blowing into its mouth, and the performance of artificial respiration by the

tracheal pipe. The first is to be effected by pressing down the ribs, which are very elastic, so as alternately to enlarge and diminish the capacity of the thorax, thus keeping up an imperfect artificial respiration. This mode of procedure we have adopted several times, but in vain, as it is not probable that much air enters the lungs. The second method, or that of blowing into the mouth is very inefficient, as, with the utmost care, it is doubtful whether the pulmonary cells can be inflated. The tracheal pipe is the only instrument by which we can so effectually fill the lungs, as to afford any satisfactory prospect of resuscitating the child. The warm bath may be regarded as a most powerful auxiliary. Le Gallois removed the head of a rabbit and secured the vessels of the neck; the animal seemed dead, but, when artificial respiration was commenced, signs of vitality were soon apparent. The heart acted; the circulation was again carried on; and muscular irritability was renewed throughout the whole system. Thus in a decapitated animal, by means of artificial breathing, he maintained for one, two, and three hours, active vitality. No stronger proof can be adduced of the

efficacy of pulmonary inflation, in renewing and supporting the action of the heart and arteries. In performing this artificial function for new-born children, it has been frequently observed, that, while the respiration was continued, the cord pulsed, ceasing to beat in a few seconds when the operation was suspended. The tracheal pipe, is a little tube of silver, designed to pass into the trachea, its end closed like a catheter, with a long broad fissure on either side, to give free escape to air and mucus. To introduce this instrument, pass the fore-finger of the left hand down upon the root of the tongue, and into the rima glottidis; and then, taking the tube with the right hand, slide it along the surface of the finger, till reaching the rima, when the tube is to be inserted into the trachea: immediately afterwards withdraw the finger, feeling on the front of the neck, whether the instrument is lying in the trachea or œsophagus. This done, the child may be taken into the hands of the accoucheur, and from his lungs, the lungs of the infant are to be inflated. Operating in this manner the artificial respiration may be executed with the best success. A woman,

whose case we recollect, having been run over by a coach, was carried into St. Thomas's Hospital, and died in a few minutes after admission. She was at the end of pregnancy, and the Cæsarean operation was performed by Mr. Green; in thirteen minutes after the death of the mother, the child was removed from the uterus, and, in fifteen minutes from the last respiration, Dr. Blundell began the artificial process. During fifteen minutes longer it was continued, ultimately completely resuscitating the child. Mr. Tomkins of Yeovil once used resuscitants for an hour and five minutes by the watch, before obvious signs of life appeared, the child at length recovering, and living for some time.

These then are the principal circumstances occurring in natural delivery, which, as it serves for the standard of all others, we shall briefly recapitulate. Let it be remembered that we have rarely to determine whether the woman be in a state of pregnancy—and that, from the existence of the grinding and cutting pains, we are still more rarely called upon to ascertain whether labour has or has not commenced.—The rule is, not to rupture the membranes;—the exceptions arise from

their unusual toughness, or from a disposition prematurely to throw off the whole ovum. In every labour, the presentation is to be made out as early as possible, if not previously, at least when the waters have passed off. In the first stage of labour little interference is necessary ;—but, when the head approaches the outlet, the perinæum should be carefully guarded.—When the head has emerged, ascertain whether the cord be coiled round the child's neck, and, if it can be easily effected, disentangle it.—The shoulders are not to be extracted by force, as the womb contracts more perfectly when allowed to expel the child by its natural efforts.—The foetus is to be kept near the genitals of the mother till the cord is divided ; and after the division, ascertain that the ligature appertaining to the child is secure ;—and lastly, by care, and the application of the abdominal bandage, guard against uterine hæmorrhage.

SECT. IV.

ORDER II.—*Lingering Labour.*

The head of the child presenting, but continuing beyond twenty-four hours, instrumental aid *not* being required.

When we consider the circumstances attendant on human parturition, that certain expulsoy powers are necessary for the birth of a child, which of necessity implies a principle, at least, of passive resistance, we can easily understand that on the degree of accordance between the two, will depend in a great measure, the natural or difficult character of labour. We accordingly find, that lingering labour, so called from being protracted beyond twenty-four hours, and yet ultimately terminating with safety to the mother and without instrumental aid, is mainly dependent on *two causes: defect of pains*, or in other words deficiency of the expulsoy power, and *increased resistance* to the passage of the child.

Defect of pains or expulsive power, may arise from *original or acquired weakness* of system, and in labour will be characterised by insufficient, irregular, or partial action of the uterus. Increased resistance to the passage of the child is principally produced by the rigid and undilatable condition of the os uteri and external parts, the large size of the foetal head, and the want of conformability in its bones, or on the small size of the pelvis, associated with an unyielding condition of the os coccygis. Monstrous formations of the foetus do not admit of the application of regular rules ; for, when these unfortunate deviations do occur, they are not constructed on any certain principles, and their management must of course be left to the skill and judgment of the practitioner. Extreme distention of the uterus by the liquor amnii, and extraordinary thickness of the membranes enclosing it, admit of such easy remedy, by the measures already alluded to, that we shall not bestow upon them a distinct consideration.

In the treatment of lingering labour, where there is deficiency of pain from original or acquired weakness of system, great scope

is afforded to the exercise of the patience and passive firmness of the accoucheur. The natural powers are often distrusted, where they ultimately prove themselves capable to accomplish the delivery ; and where, if they have not been interfered with, the subsequent recovery will be very satisfactory. We cannot form a correct opinion of the degree of pain required in different cases to complete the delivery. In some women, the most powerful and continued efforts are necessary for the birth of the child ; while in many lingering cases, where there seem to have been scarcely any really good pains for twenty-four hours, we nevertheless find the head protruding at the external parts, and one or two rather severe efforts are sufficient for its expulsion. We are always unwilling to hasten the progress of lingering parturition, *if symptoms of debility, of cerebral affection, or of pressure on the parts themselves*, do not indicate the necessity for interference. In some patients, there is so little irritability, so little anxiety about the protraction of the labour, if the circumstances of delay are candidly and judiciously stated, that we are not induced to employ

any stimulant remedies. In other women, the converse of this statement is true, and they will more quickly require assistance. The patient's strength must be supported by mild nourishment, such as beef-tea, veal-broth, &c. These, however, so often produce uncomfortable distention of the stomach, that small quantities of solid food, as *sandwiches*, at proper intervals, are often preferable. Dr. Hunter used to say in his lectures, that he had attended a patient three days and nights and one whole fourth day, the woman crooked and the child large. She lived all the time on tea and gruel only. Dr. Merriman appends the following remark, " Had the doctor allowed this patient cordials and stimulants, with a view of keeping up her strength, is it probable that the labour would have terminated so favourably?" We think that it would not; still there are cases, where moderate stimulants must be exhibited, and for this simple reason, that instrumental aid will be required, if some safe impulse cannot be given to the uterine efforts. We are decidedly opposed to wine, or stimulants in any form at the commencement of labour, or to their injudicious exhibition during its continuance ;

but we have seen the happiest effects result from their judicious administration in the protracted stages of lingering labour. I was lately called to a case, and requested by the accoucheur to use instruments, where the patient had been forty-eight hours in labour of her first child ; the parts had been rigid, and sixteen ounces of blood had been early abstracted ; the head had for many hours been pressing on the perinæum, and the pains were ineffective and at distant intervals. I encouraged the patient to hope for a safe delivery, ordered some solid nourishment, and port-wine negus ; and in three hours, the labour was safely completed, although the child was dead. In lingering cases, the bowels should be cleared of feculent or other accumulations by mild aperients and clysters ; the patient is not to be fatigued, and if the pains merely harass, and do not benefit her, she may take mxxv. vel mxxx. of the tincture of opium. Much larger doses than these have been recommended, and we have seen their bad effect in an entire suspension of uterine action.

Where the os uteri is nearly or fully dilated, and where the head has remained in one

position some hours, with ineffective pains, we may consider the action of the uterus arrested; and if the means already pointed out are not successful in restoring its contractile energy, we may have recourse to the *ergot of rye*, which is universally allowed to increase the uterine effort, and consequently to hasten the delivery of the child. It may be given in infusion; a drachm, infused in a tea-cupful of boiling water for fifteen minutes, is the usual dose, and if it should not *quickly* produce a *powerfully contractile* effect, it may be repeated, although with *diminished* chance of success. It has been considered very destructive to the life of the child; but from what we have seen of its effects, and from the extensive enquiries we have made, we are inclined to think that the death of the child, in many of the instances, ought, in fairness, to have been attributed, to other causes, as its too early administration; in some cases before the full dilatation of the parts, and in others, where the head was unfavourably situated. It is evident, that in these circumstances the child is very likely to be sacrificed to the severe and fruitless continuance of the parturient nisis, to which the *ergot* almost

invariably gives rise. It does sometimes fail to produce any good effect; but this is common to all remedies; and when given before the head is in the cavity of the pelvis, during the rigidity of the softer parts, or where there is any deformity, we can easily conceive that the powerful contractile efforts which it induces, may seriously injure both the mother and child. A most extraordinary circumstance, in relation to the ergot, is noted by Dr. Bibby, of New York, that where the fœtus has been some time dead, and putrefaction, to any extent, has taken place, the remedy is altogether inert. In no case where it has been used has hæmorrhage occurred, and in natural labour, when hæmorrhage does occur, it has been employed with great advantage.*

* Perhaps the following remarks may be deemed a summary of what is known of its powers.

The *Secale Cornutum*, or ergot of rye, which was deemed so deleterious by the French, in 1774, as to be proscribed by a legislative act, has of late attracted the notice of physicians, as possessing certain specific powers over the uterus. The ergot may be advantageously given under the following circumstances:—

“ 1. When in lingering labours, the child has descended into the pelvis, the parts dilated and relaxed, the pains having

Increased resistance to the passage of the child, which we have already enumerated as one of the principal causes of lingering labour, may be produced *by the rigid and undilatable condition* of the os uteri and external parts. These are very trying cases,

ceased, or being too ineffectual to advance the labour, there is danger to be apprehended from delay, by exhaustion of strength and vital energy, from hæmorrhage or other alarming symptoms.

“ 2. When the pains are transferred from the uterus to other parts of the body, or to the whole muscular system, producing general puerperal convulsions.

“ 3. When in the early stages of pregnancy, abortion becomes inevitable, accompanied with profuse hæmorrhage and feeble uterine contractions.

“ 4. When the placenta is retained from a deficiency of contraction.

“ 5. In patients liable to hæmorrhage immediately after delivery. In such cases, the ergot may be given as a preventive a few minutes before the termination of the labour.

“ 6. When hæmorrhage or lochial discharges are too profuse immediately after delivery, and the uterus continues dilated and relaxed, without any ability to contract, and,

“ 7. Where the head of the child has been left in the uterus by being separated from the body.”

On the other hand,

“ 1. It should never be administered when nature is competent to a safe delivery.

for the pains are sometimes so frequent, as to render it necessary, for the satisfaction of the patient, that the accoucheur should be in attendance for hours before his assistance is really required. We are fully aware how constantly rigidity is the cause of tedious labour, and we believe that its treatment has not obtained perhaps all the consideration to

“ 2. It should never be administered until the regular pains have ceased, or are ineffectual, and there is danger to be apprehended from delay.

“ 3. It should never be administered until the rigidity of the os uteri has subsided, and a perfect relaxation induced.

“ 4. It should never be administered in any case of preternatural presentation that will require the fœtus to be turned.”

Under the precautions which are here stated, the efficacy of the ergot is very striking; being followed, in from five to twenty minutes after its exhibition, by a bearing down effort, which gradually increases, and goes on, without any intermission till the delivery be completed. It is this uninterrupted action of the uterus which renders the remedy so improper, when the presentation is unfavourable, as any subsequent attempt to turn the child, must, of necessity, prove abortive, and even dangerous.

With respect to the dose, twenty or thirty grains, given every ten minutes, generally answers better than a larger dose, as it does not affect the stomach with nausea or vomiting; an operation which sometimes interrupts its action on the uterus. It is asserted that the ergot does not produce abortion, although it has been frequently given for this purpose.

which it is entitled; yet we cannot concur in the following opinion of Dr. Dewees. "Writers have but very imperfectly considered the rigidity of the soft parts as a cause of difficult or tedious labour; some, indeed, do not mention it, and others do so merely en-passant. It is so common a case that every practitioner must have met with it; but it has failed to make a proper impression, because time and severe suffering have eventually overcome it, though not always with safety either to mother or child." We cannot perceive that Dr. Dewees has thrown any new light on this subject; he has certainly recommended larger abstractions of blood (a practice previously enjoined by Mauriceau to a moderate extent) than we should feel disposed to adopt, unless the rigidity was extreme, the pulse very full and frequent, and the general tendency to inflammation and fever marked and decided. We trust we shall never hesitate to adopt the boldest and most vigorous treatment, when absolutely required; but as partial fatuity, in our opinion, has often resulted from the unnecessarily large abstraction of blood in apoplectic disease, so a painful and protracted recovery,

with its attendant evils, will we think, often occur, from bleedings to the extent of thirty, forty, or even *fifty* ounces in these cases.

Were we called to a patient with rigidity, whose previous labours had been protracted from the same cause, we should consider venesection as the most important in the series of remedies. In rigidity, however, of a moderate kind, we should first empty the rectum, whose feculent accumulations frequently obstruct labour. The bladder should not be distended, and the erect posture, short of fatigue, may be maintained; every thing being avoided at all likely to produce fever. Tea, toast, and water, barley-water, milk and water, or veal-broth, may be taken; and the apartment should be airy and cool. We have twice rubbed in the belladonna, as advised by Dr. Conquest, but without any benefit: we have many times been much gratified with the effect of *opiate clysters, or suppositories*, introduced into the rectum, even after opium has been taken internally, without any apparently good effect. Opium should not be given until the bowels have been relieved, and of course, if bleeding has been previously employed, it will be exhibited under the most

advantageous circumstances. Some time since, I attended Mrs. —, aged twenty-two, in her first confinement, the edges of the os uteri being much attenuated, very hot, not at all moist, nor disposed to dilatation. There was neither fulness of pulse nor heat of surface, beyond what commonly occurs in the commencement of labour. The bowels were fully relieved by castor-oil, and the pains had been tranquillised by thirty minims of the tincture of opium. After an hour's sleep, she awoke refreshed, and the pains recurred. After the lapse of eighteen hours, there was no alteration in the os uteri. A drachm of the extract of belladonna was rubbed about the cervix and os uteri, but, after waiting for two or three hours, there was no perceptible effect. The pains were very vehement and forcing, but the attenuated edges and heated condition of the os uteri still continued, and it was not dilated more than enough to admit the tip of the finger. A clyster, *composed of six ounces of linseed tea and sixty minims of the tincture of opium*, was thrown into the rectum: it remained nearly an hour, and immediately on its expulsion *two* grains of solid opium, softened

by mucilage, were insinuated into the bowel, just above the sphincter ani; very shortly afterwards, the condition of the os uteri began to change, and, before the expiration of three hours from the administration of the injection, the head was protruding at the outlet. We have frequently since this period, adopted the practice of giving opiate clysters and suppositories, and always with decided advantage. Some practitioners, says Dr. Merriman, are fond of introducing lard or pomatum, in order to induce relaxation, but this never does good, unless the rigidity is confined to the vagina, or external parts, it may then be frequently used with advantage. The best method of using greasy applications in such cases, is to have very good tallow, scraped and rolled up into a ball, about the size of a nutmeg; this should be carried by the finger as high as possible into the vagina; here it gradually dissolves, and is dispersed over the whole surface. It answers best, in those cases where the natural mucus of the parts is either not duly secreted, or has been accidentally or incautiously separated.

The *large size* of the foetal head, and the *diminished capacity* of the pelvis, oppose

nearly the same obstacles to the full effect of the expulsatory powers of the uterus. It is impossible exactly to predetermine in what proportion the diminution of capacity of the pelvis may consist with the passage of the child's head, reduced as much as possible by the overlapping of the cranial bones; but we have seen the head so altered in shape, and so diminished in bulk, by the operation of this principle of conformability, as would induce us to wait for some days, provided no alarming symptoms arise, before we should class it among the difficult labours, and avail ourselves of instrumental aid. The elongated, squeezed, and sugar-loaf heads, which we so often see, and where, although much compressed, the child is yet born alive, must induce great confidence in the natural powers. It is a common remark, and without entirely assenting to its truth, we may repeat it here; that, after the most severe labours, women frequently have the best recoveries. Let the patient avoid stimuli, except by the permission of her medical attendant; let her mind be tranquillised by an assurance of the probability of her welfare, and protracted parturition will very often ter-

minate safely and well. We wish, in concluding our remarks on this order of labour, to renew the cautions already expressed, relative to rupturing the membranes. To allow the membranes to be ruptured by the natural efforts is the rule; their artificial rupture, the exception. We may now add, that the progress of labour may be sometimes accelerated by this procedure, if the os uteri be fully dilated; if the head, or a large portion of it, has fairly descended into the cavity of the pelvis; and, if the perinæum be thin and dilatable. The premature evacuation of the waters, occurring either spontaneously or from the effort of the accoucheur, renders the woman extremely uncomfortable, as they may continue dribbling away for some days, attended by occasional harassing but unprofitable pains, the patient being kept in constant anxiety about the coming on of parturition. It is worthy of observation, that labour seldom occurs, in these cases, till the whole of the liquor amnii has passed off; but, when the contractile efforts of the uterus do supervene, the process is generally quickly terminated, and quite as safely as in other cases.

The funis may pass down with the waters, and descend below the head, and the protraction of the labour, which it was intended to avoid by the artificial rupture of the membranes, is sometimes produced thereby, as the comparatively hard and unaccommodating head of the child is substituted for the soft and elastic bag containing the waters, in the process of dilating the os uteri and upper part of the vagina. It is therefore very evident, that the interruption of the natural progress of delivery, and the injudicious management of the attendant, may convert that which was natural into lingering, and perhaps difficult labour. The indiscriminate exhibition of cordials, the activity of the woman herself, and the excitement of friends, is prejudicial. We must dissuade her from bearing down or forcing the pain, as it is termed, till the parts are prepared for the expulsion of the child ; we must not irritate and inflame the vagina by too frequent examinations ; and we must not allow the bladder to become unduly distended. Chapman, in his fortieth case, gives an account of a poor woman who died undelivered, in consequence of an over-distended bladder.

SECT. V.

ORDER III.—*Twin Labour.*

No infallible criterion exists by which we can discover a plurality of children in utero before their birth; it is therefore fortunate, that in their delivery, we need not greatly deviate from those rules which govern the labours of single children. No difference of opinion can exist as to the birth of the first child; if it present naturally, it will of course be managed as a natural labour; if preternaturally, it will require peculiar treatment. It does sometimes happen, that a part of the second child, is combined with the presentation of the first, and thus the case may be rendered clear, before the completion of the first birth. In every case, it is proper after the birth of a child, previously to any attempts for the extraction of the placenta, and more especially where we suspect a plurality of children, carefully to examine the abdomen externally, and, if we

are not satisfied by such an examination, we may pass two fingers into the os uteri, when we can scarcely fail, if there be twins, to ascertain some of the parts of the remaining child. Practitioners of midwifery have differed in several points, relative to the birth of the second child, as to whether it should be entirely committed to the natural powers, or, if assistance be necessary, at what time it shall be afforded. Obstetric science admits of great certainty in its practical details ; occurrences of a general or of a peculiar kind may arise, and they may be met by general or peculiar laws ; still, however, much must depend on the judgment of the accoucheur in individual cases. If the birth of the first child has been preternatural, or if it has required instrumental aid ; if it has been succeeded by hæmorrhage, or complicated with convulsions ; we see every reason why the expulsion of the second child should be accomplished with as little delay as possible ; and if the converse of this statement be true, if the second presentation be natural, we should not hesitate, after recruiting the patient's strength, to rupture the membranes, the parts having been already dilated, or

if the presentation of the second child were preternatural, we should, with equal solicitude make the earliest attempt to bring it into the world. When both the children present naturally, and the labour of the first terminates without artificial assistance, we may properly wait for the occurrence of the next pains; if these, however, are deferred beyond an hour, we may rupture the second set of membranes, provided the patient be sufficiently recovered from the first labour, and the subsequent birth is seldom protracted. We have found great advantage from the application of the abdominal bandage immediately after the first birth, as, by gentle pressure of the uterine parietes, we induce a speedier return of the contractile efforts, and more effectually prevent any subsequent flooding. A very singular case of complicated labour, from locking of the heads of twins, is related by Mr. Allan, in the second part of the twelfth volume of the *Medico-Chirurgical Transactions*. Dr. Clough also published a curious instance of twins in the *Medical and Physical Journal*, both of which were discovered by the midwife, one presenting with the hand, and the other with the

head. The labour advanced very slowly, on which account Dr. Clough was consulted. He found the feet and body of one child, with the arms down on each side, protruded through the external orifice, and assisted to extract the shoulders. Still finding a difficulty, he examined again, and ascertained that the head of the second child and that of the first were in the pelvis together. By the efforts of the uterus, the head of the second child was expelled, and then that of the first; both had been long dead; the mother recovered. A greater number of twin than of single children die during infancy, and of quadruplets very few reach maturity.

The following statements and observations are abstracted from Appendix, No. 20, to Dr. Merriman's Synopsis to Difficult Parturition. "There seems to be a very extraordinary variety in the averages of twin and triplet births in different countries, and under different circumstances. Thus the average of twin births has been stated.

By Dr. Clarke, at the Dublin Lying-

in-Hospital, as - - - 1 in 56½

By Dr. Bland, at the Westminster

Dispensary - - - 1 in 80

By Professor Boer, in the Vienna			
Lying-in-Hospital	-	-	1 in 80
By Dr. Denman, at the British Hos-			
pital	-	-	1 in 91
By Dr. Denman, at the Middlesex			
Hospital	-	-	1 in 93
By Mr. Burns, in his own practice			
			1 in 95
By Madame Boivin, at the Hospice			
de la Maternité	-	-	1 in 132
By Monsieur Tenon, surgeon to the			
Salpêtrière, Paris	-	-	1 in 96

“ Respecting triplets the averages are still more various : many accoucheurs of very extensive practice, having passed through a long life without once witnessing three children at a birth.

“ Dr. Bland kept a very exact register of 1897 women, delivered at the expense of the Westminster General Dispensary, among whom there was one case of triplets ; while I held the office of physician accoucheur to that charity, about 3,500 women were delivered, among whom I was twice called to triplet labours.”

In the first 18,300 women delivered at the British lying-in hospital not a single in-

stance of triplets had occurred ; but there were three such cases among 20,357 women delivered at the Hospice de la Maternité, at Paris, and nineteen among 59,354 women at the Dublin lying-in-hospital, or one in 3124. The averages of four children at a birth can scarcely be ascertained, yet several such instances are known to have happened ; and there are a few authentic histories of five at a birth. Dr. Osborn is said to have once witnessed an expulsion of six abortive ova ; and Borellus asserts that, about three years before he published his second Century of Observations, the wife of a nobleman at Languedoc, was delivered of eight at a birth. Borellus, it must be acknowledged, tells many other marvellous stories. Haller says upon the subject “ Non rarò fœmina geminos fœtus parit ; rarius paulo tres, neque unquam supra quinque.”—*Physiologie*, 929.

Complications of Natural Labour.

Having fully detailed the series of events generally attendant on the *first* class of labour, we shall annex a brief description of some of those *exceptions* which arise from complicated and anomalous circumstances. These affections are produced either by parturition itself, or by some peculiarity in the constitution of the patient, and as they may occasion deviations of a serious kind from its regular, simple course, they merit peculiar attention. Some of these occurrences disturb so entirely the order of labour, and induce during its progress, such alarming changes in important organs, as to excite considerable anxiety, not only for the natural termination of the process, but for the safety both of mother and child. Thus while syncope may only slightly retard the progress of a labour, and if not profound or protracted, originate little solicitude in the mind of an experienced practitioner, convulsions cannot fail to create the most distressing apprehensions.

We are aware, that in associating these

anomalous and complicated events with natural labour, we deviate from the course generally pursued, a distinct class having hitherto been assigned them. This arrangement, however, appears capable of improvement; for as all these occurrences may happen where the presentation is natural, it is certainly more simple, and perhaps more correct, to subjoin them to this order of parturition. A young practitioner is often perplexed in a natural case, by the appearance of certain symptoms and changes which he has never understood to form any part of simple labour; his fears are consequently excited, he dreads anomalous or complicated parturition, and haste and alarm, are quickly substituted for judgment and presence of mind. Now, if he knew the real nature and extent of the affection, and that it was occasionally attendant on natural labour, he would soon either remedy the mischief, or interfere only so far as its importance demanded. Another advantage is obtained by this classification, we can arrange under it morbid occurrences, which cannot well be placed under any order of parturition, and which only claim attention, when they proceed

to any great extent, such as the hæmorrhages from the nose, anus, or lungs, distention of the bladder, impaction of the fæces within the rectum, &c. We divide these affections into *two* classes. *First*, Those which are remediable by proper treatment, and] which less seriously involve the safety of the patient and her offspring, and, *Second*, Those which from the moment of their appearance are replete with danger, and which, notwithstanding the most able treatment, compromise the safety both of the mother and the child. In the *first* class we comprise,

Obesity.

Syncope, not dependent on hæmorrhage from the uterus.

Rigors, vomiting, and fever.

Hæmorrhage from any part excepting the uterus.

Obliquities of the uterus.

Distended, or prolapsed state of the bladder.

Prolapsus ani.

Œdema of the cervix uteri and sanguineous or lymphatic infiltration of the external parts.

Mal-positions of the head.

The *descent of the funis*, or the *hand* with the head.

In the *second* class we enumerate,
Laceration of the uterus and vagina.
Laceration of the bladder.
Tumours in the pelvis.
Convulsions.

Obesity is not unfrequently occasioning unpleasant affections during the progress of parturition. In very fat patients labour is often rather lingering, the dilatation of the os uteri is slowly accomplished, and the contractile power of the uterus seems to be greatly impeded, by the generally loaded state of the adipose membrane throughout the body. Such patients bear labour badly, acceleration of pulse and febrile disorder are soon excited, and they are quickly fatigued by the parturient effort. When the pains become severe and expulsive, they complain of abdominal tenderness; and the omentum probably suffers much from contusion and pressure. It is desirable to examine the os uteri as rarely as possible in these cases, for the vagina, the whole vulva, and indeed all the external parts are hot and tumid. Such patients, although they cannot bear depletion to any considerable extent, will derive ad-

vantage from the early abstraction of eight or ten ounces of blood, from an aperient state of the bowels, from a cool and airy apartment, and from the frequent exhibition of the effervescent saline, with ten or fifteen minims of the tincture of hyoscyamus. The accoucheur, especially if it be a first confinement, should encourage his patient, but by no means allow her to suppose that labour has really commenced, till the vertex is advanced somewhat beyond the brim ; for in three very obese patients we occasionally attend, there is slight contraction of its antro-posterior diameter, and many hours invariably elapse before the head enters the cavity of the pelvis. In the year 1825, we were in attendance on a lady, whose obesity was remarkable, and whose labour was distressingly protracted. The child was, however, born by the natural efforts, but the recovery was slow and difficult. On the *first* day after delivery, there was a high degree of febrile excitement, the pulse was 120, contracted and hard, skin pungently hot, urine high coloured and scanty, and a *most painful sense of tension all over the abdomen*, which we attributed to the bruising

of the omentum. *Thirty* leeches were immediately applied, and subsequently a large blister; the bowels were freely opened by calomel and opium, and the antiphlogistic regimen strictly enjoined. This lady at length recovered, but not without exciting considerable anxiety for her ultimate safety. Dr. Blundell mentioned to me the particulars of *two* cases of a similar kind, in which he was consulted, both of which terminated fatally in a day or two after delivery. There was probably extensive bruising of the omentum, and the symptoms were exactly similar to those produced by mortification of the upper part of the vagina and cervix uteri. The pulse was 140, and scarcely perceptible at the wrist, skin clammy, hands and feet of a marble coldness, total collapse of strength, and the countenance was correctly characterised, by the expression of death in the face. In cases of obesity the exhibition of opium may prove highly advantageous: as a suppository introduced into the rectum, it may induce earlier relaxation of the os uteri, and exhibited internally, after the termination of the labour, it may tranquillise the excitement and

irritability of system. The bladder should not be allowed to become distended, and the rectum should be cleared of all feculent impactions.

Syncope, not dependent on hæmorrhage from the uterus. We have seen many cases of syncope during parturition, arising either from peculiarity of constitution, or an especial proneness to fainting on the slightest excitement,—from exhaustion induced by the severity and protraction of labour,—or from internal uterine hæmorrhage, which we shall not here notice. In the first kind of syncope, little medical interference is demanded; it may succeed almost every pain, but the progress of the labour will rarely be retarded. Sal volatile applied to the nose, half, or a teaspoonful of brandy or wine occasionally given in as much water, the admission of cool air into the apartment, and the sprinkling of cold water over the face and forehead, will generally suffice for its removal. Where, however, syncope is arising either directly from exhaustion, or from the sympathy thereby induced in any organ or part, its treatment is not so simple, and the practi-

tioner will frequently remain for some time in a state of painful solicitude. The following case occurred to me not many weeks since: Mrs. —, ætat. 22, was taken in labour of her first child early on Monday July 28. The pains were only preparatory, and on an examination eighteen hours after their commencement, I found the os uteri undilated, its edges thick, smooth and unyielding, and scarcely open enough to admit the tip of the finger: at nine P.M. twenty-two hours after the first pains, an enema, consisting of half a pint of simple gruel and two drachms of the tincture of opium, was thrown into the rectum. An hour afterwards, finding some disposition to dilatation, I repeated the injection with the same quantity of tincture of opium. In *two* hours more, the os uteri was fully expanded, the pains had become forcing and powerful, and the vertex began to descend into the cavity of the pelvis. At this time, vomiting occurred, and was immediately succeeded by the most alarming syncope I ever saw. I was somewhat relieved by hearing that her temperament was highly excitable, and that she frequently fainted on trivial occasions; for

twenty minutes, however, the pulse was scarcely perceptible at the wrist, the heart's action was irregular, feeble and fluttering, and her whole appearance was most distressing and deathly. Small quantities of pure brandy were poured down the throat in quick succession, amounting altogether to three-quarters of a pint; cold water was dashed freely on the face and forehead, and in rather less than an hour I had the satisfaction to see her gradually recover; nor did syncope again occur during the subsequent progress of the labour. In this case, there was no hæmorrhage from the uterus; she was certainly fatigued, and this perhaps, associated with her peculiar proneness to syncope, may explain its sudden and alarming occurrence. Several hours elapsed before the expulsive efforts were again established; and at one period I had prepared some infusion of the ergot, and should have administered it had not the pains recurred. The *forceps* and the *ergot* appear to afford the best chance of relief in these cases; and where the deficiency of uterine action arises from continued, rather than sudden hæmorrhage, we should use the ergot.

Where, on the contrary, the hamorrhage is rapid, and in large quantity, and where there appears no probability of the return of uterine effort, we should prefer delivery by the forceps.

Rigors, vomiting, and fever sometimes require medical treatment during parturition. A certain degree of febrile excitement, characterised by increase of the pulse and flushing of the surface of the body almost invariably attends labour, and where, by the severity of the affection, it interferes with its advancement, it must be treated on common principles. Excessive vomiting has been already alluded to, and if we fail in affording entire relief, we may at least encourage the patient to hope for its speedy removal, as it is generally connected with vigorous action of the uterus, and almost invariably terminates with the birth of the child. Rigors seldom occasion any alarm in the mind of the practitioner, although they are sufficiently distressing to the patient and her friends. They are most frequent in the early stage of labour, but they may occur at any period, more especially

where the patient is nervous and hysterical and the progress slow. In a case we lately attended, the most violent and uncontrollable rigor, unattended by cold, occurred just previously to the birth of the child.

Hæmorrhage from any part excepting the uterus is rare, and still more rarely requires medical treatment. We were, however, some years since rendered very anxious by the occurrence of *epistaxis* in the protracted labour of a very fat patient. Every pain induced a fresh gush of blood from the nose, till at length she appeared quite exhausted; and having employed the saturated solution of alum without success, we were compelled to plug the nostrils by soft dossils of lint; after which there was no more bleeding. If the hæmorrhage had not been suppressed by this measure, it would have been necessary to deliver by the forceps; for the patient was fast approaching to syncope, and the bleeding was so evidently produced by the contractile efforts of the uterus, that we should not have been justified in waiting for the natural expulsion of the child. By this rule, then, we may regulate our conduct, if the hæmorrhage be moderate, and does not re-

tard the progress, we need not interfere ; if, on the contrary, its further continuance might exhaust the patient, and by such exhaustion delay the delivery, we are then justified in hastening by artificial means the birth of the child. If the membranes are not ruptured, we may turn ; if the head be advanced somewhat through the cavity of the pelvis, the delivery must be effected by the forceps ; not that these practices are not in themselves evils, but perhaps lesser evils, than consigning the woman to her own resources.

Obliquities of the uterus, if existing to any considerable extent, occasion much inconvenience during parturition, and they sometimes render it extremely difficult to bring the axis of the uterus to correspond with the centre of the pelvis, and of course till this can be effected, uterine contraction will be exerted almost in vain. Three kinds of obliquity may be enumerated : *the right lateral obliquity, the anterior obliquity or pendulous abdomen, and the left lateral obliquity*. The first and second kinds are most generally occurring, the last, very rarely. The course of descent of the rectum, along the left side

of the sacrum, the position of the sigmoid flexion of the colon, and the almost constantly loaded and distended state of these intestines, aided by the prominence of the sacrum, will satisfactorily explain why we so often meet with the right lateral obliquity. The pendulous abdomen or the anterior obliquity, is seldom seen in first pregnancies, without there is great laxity of the abdominal parietes ; when however the firmness and elasticity of these supports has been weakened by pregnancy, this deviation is not uncommon. It is of great importance correctly to understand these mal-positions, for it will almost entirely depend upon the knowledge of the accoucheur, whether patients thus affected, shall pass through a painful and protracted labour ; or whether by resorting to the principles of the art, the period of their suffering shall be greatly abbreviated. In the first kind, or right lateral obliquity, it will generally be sufficient to place the patient on her left side ; if, however, the axis of the pelvis and the os uteri cannot still be brought to correspond, we may make *gentle pressure* on the right side of the abdo-

men, and introducing a finger into the os uteri, if it be dilatable, *gently* draw it down, during the absence of pain towards the symphysis pubis. By the careful repetition of these measures we shall overcome the obliquity, and afterwards the labour may rapidly proceed. The pendulous abdomen will often require, even during gestation, to be supported by a proper bandage, or the patient will experience great fatigue and pain. At the time of labour she should be placed on her back, and if still the os uteri is so far towards the sacrum, that it can scarcely be felt, the abdomen must be elevated by the hands of the nurse, and maintained in its improved situation, by a broad towel passed underneath it. If the pains are sufficiently powerful to force down the head rapidly, the anterior lip of the os uteri should be *gently* pressed upwards towards the symphysis pubis, so that the head in its descent may not carry down any portion of it, an event necessarily connected with great suffering, and one which delays the progress of the labour, as the expulsive efforts of the uterus cannot be so entirely bestowed on its orifice.

A distended or prolapsed state of the bladder are hindrances to parturition, the former by obstructing the uterus, the diaphragm, and the abdominal muscles in the full exercise of their expulsive power, and the latter by its encroachment on the vaginal passage. It is scarcely necessary to allude to the catheter as the remedy for the one, and to *gentle* pressure upwards, in addition to the use of the catheter, as the best means of relieving the other. We may, perhaps, mention here, that in difficult labours the state of the bladder should be frequently ascertained.

Prolapsus ani can scarcely be mentioned as obstructing the progress of natural parturition, and yet it is deserving of notice. In almost all cases, when the head bears upon the perineum, the anus becomes wide open, and it sometimes, though not frequently, happens, that the gut prolapses. If this has occurred to any considerable extent during delivery, it will require care subsequently; for in a case which happened to us only a few weeks since, it was so serious an evil, that for nearly a fortnight, we were compelled to apply eight or ten leeches to the prolapsed anus every

other day, before we succeeded in its complete reduction. We recommend the practitioner, during the expulsive pains, carefully to support the anus, if it has any disposition to descend ; for it will save his patient much after suffering. If, notwithstanding every care during delivery, the bowel continues afterwards swelled and protruded beyond the verge of the anus, and loaded with blood, leeches and tepid goulard poultices with tinct. opii. should be frequently, or rather constantly applied, and the recumbent position sedulously maintained: attempts at manual reduction being seldom found of much use.

Œdema of the cervix uteri and lymphatic or sanguineous infiltration of the external parts, may be enumerated amongst the causes protracting labour. The former is often met with, and will require venesection to eight or ten ounces, and afterwards an aperient clyster. The os uteri may also be *carefully* and *gently* dilated by the introduction of one or two fingers, thus relieving it, in some degree, from the pressure of the uterus, one principal cause of its œdematous condition. The infiltration of the labium is not so frequently happening, but Dr. Francis Ramsbotham mentioned to

me a case, which lately occurred to him, where the distention was so great, that he feared the parts must have been ruptured on the delivery of the child. In such instances a cupuncturation would perhaps be the best remedy.

Malposition of the head may give rise to great difficulty, if the proper time to rectify it be neglected. We have already said, that the presentation of the vertex is the most natural, and therefore the most conducive to easy parturition ; but even here difficulty may be occasioned, if the long diameter of the head should be opposed to the short or antro-posterior diameter of the brim, a position which may be known by the sagittal suture running from before backwards instead of from side to side of the pelvis. Of this deviation, there are two kinds, first, *where the vertex is found behind the symphysis pubis*, and second, where, although extremely rarely, *the forehead, or anterior fontanelle, occupies the same position*. In the former of these cases, if the pelvis be well shaped, and of full size, and the head not at all exceeding the standard dimensions, the vertex will continue to descend behind the symphysis, and the chin

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will naturally be pressed close against the breast, thus shortening the long diameter of the head. In its further progress, the occiput will present itself to the arch of the pubis, and its exit will not be accomplished with greater difficulty than in natural labour. If, however, the head should exceed or the pelvis fall short of its standard dimensions, difficulties may arise, rendering manual or instrumental assistance absolutely necessary. In this case, the patient must be placed on her back, and the thighs drawn up at right angles with the body, the hand must be introduced into the vagina, and after slightly raising the head to give greater facility to the alteration of its position, we must turn the vertex towards one of the acetabula, either to the right or left, according to the hand we employ. The head may now be left to the natural efforts, but should any of the circumstances before alluded to, arise, the delivery will probably require to be terminated by the forceps. While writing the above, I was called to Mrs. J——, æt. 36, in labour with her fourth child. On my arrival, I was informed, that all her previous accouchements had terminated very quickly after the escape of

the liquor amnii ; but that in this instance, the water had passed off some hours, and that although the pains had continued remarkably forcing and powerful, little or no progress was made. On examination, I found the vertex behind the symphysis pubis, and of course the long diameter of the head opposed to the *short* diameter of the brim. After explaining the nature of the case, I introduced my right hand, and in the manner already described, I turned the vertex towards the right acetabulum : this was effected with much less difficulty than I had anticipated from the long continuance of the pains. In fifteen minutes afterwards the child was born. Dr. Dewees mentions rather elaborately, as one of the circumstances complicating or obstructing parturition, the *chin departing too early from the breast*. As we have never met with this cause of delay, we shall transcribe his remarks upon it.

“ This case is known by the anterior fontanelle being found in the centre of the pelvis, in the beginning of labour; and at the last period, by this part being at the bottom, or rather the lowest part of the child's head, and resting on the internal face of the peri-

næum ; by one of the parietal protuberances offering under the arch of the pubes ; and by the forehead being placed on one side of the pelvis. The indication in this situation of the head is to restore the chin to the breast ; this may be effected at two distinct periods of the labour ; first, where the head has not descended entirely into the lower strait ; the second, where it occupies the lower strait. As regards both convenience and certainty, the first situation of the head is the preferable to operate upon ; and where practicable, should always be chosen. But, to act with success, it is necessary that the os uteri be pretty well dilated, and the pains sufficiently brisk. The mode of acting in this case is very simple ; first rectify the obliquity of the uterus, by placing the woman upon the side opposite to the deviation, if it be either the right or left lateral that prevails ; upon the back, if the anterior : second, in the absence of pain, push up the forehead, and maintain it in that position by making a fulcrum of the points of two or three fingers ; when a pain comes on, keep up the resistance by supporting the forehead with the fingers, until the vertex is found to descend and the forehead to rise in

the pelvis; when this is done the delivery of the head may be trusted to nature. We believe it is seldom necessary to introduce the whole hand in this case, though, perhaps, absolutely necessary in the second.

We will endeavour to illustrate this subject by the relation of a case. Mrs. — was under the care of a young practitioner of midwifery with her fifth child. Her labours were ordinarily rapid, and she of excellent health and constitution. She was attacked early in the morning in the usual manner of her labours, and the accoucheur gave her a promise of very speedy relief; her pains were strong and frequent; the uterus was well dilated, and the membranes burst soon after the arrival of the physician. Every expectation was entertained that the patient would soon be delivered; the head of the child had descended to the inferior strait, the pains strong and frequent; but after a very short period the head was not found to advance a jot. Still supposing that nothing could prevent the delivery of a head so *near to the world*, he gave constant encouragement to his patient, until her patience and that of her friends were exhausted, and they proposed a

consultation. To this he did not absolutely object, but begged they would wait another hour before this was resolved on, assuring them it was impossible it should last beyond that time. The hour passed away without his hopes being realized, and the consultation was again urged, to which he reluctantly consented, from a firm persuasion that it was unnecessary. We were now sent for (six o'clock, P.M.); we were at that moment some miles in the country, and did not get home until after eleven o'clock at night, and, at the time we arrived at the bed-side of the patient, seventeen hours had elapsed from the commencement of her labour, which, until this time, had rarely occupied two. The gentleman in attendance gave the very candid statement related above, with the additional declaration that he was "at his wit's end." He declared he could not possibly conceive the reason of this very unusual delay, and begged we would examine the patient. This we did immediately, and found the case to be *the too early departure of the chin* of the child from its breast, as represented in the second situation of this presentation. We told our opinion to the Doctor,

and tried to explain the mode of remedying this mal-position. He undertook this office, under the persuasion he understood it, and could manage it, and we were anxious he should do so, as he was a particular friend of the family, and was just getting into obstetrical business. He however pretty quickly abandoned the side of his patient, and earnestly requested we would do what was necessary for the relief of the poor woman. We had the patient properly placed, and introduced our hand under the head of the child, and raised it up to a sufficient height, and then sustained the forehead until a pain came on; the first and second pains did not bring down the vertex as we had hoped, owing to the very firm contraction of the uterus upon the body of the child; we now directed the head still more towards the right sacro-iliac junction, and then had the satisfaction, upon the accession of the third pain, to find the vertex descend properly; we withdrew our hand, and the head was delivered the next pain, to the great joy of the mother, the safety of the child, and the astonishment of the Doctor.

Of Presentations of the Face, in which the eyes, nose, or mouth will be discovered, occupying the centre of the pelvis. These presentations generally give rise to considerable difficulty, and while it is highly important not to defer assistance too long, by which the life of the child will be sacrificed, and the genital organs of the mother pressed upon and injured; we may, nevertheless, in three out of the four positions of this part, afford a full, and perhaps a rather protracted trial to the natural powers, ever bearing in mind, that the occurrence of any unfavourable or dangerous symptoms in the mother, justify and demand immediate interference. The greatest care is necessary, not to injure, by frequent handling, the soft and prominent parts of the child's face; and although the utmost tenderness cannot altogether prevent ecchymosis and swelling, these, as well as the sufferings of the mother, will be much aggravated, by repeated and harsh examinations. It is scarcely necessary to add, that the bladder, in these cases, will require watchful attention.

We notice *four* varieties of presentations of the face. *First, where the child is opposed to the pubes*, the most favourable position, both as regards the safety of the child and the facility of management. Here, if the head be of standard dimensions, and the pelvis in every way well proportioned and of good size, vigorous and continued uterine effort will generally suffice for the termination of the labour. A few months since, I attended Mrs. M—, æt. 22. It was her first labour; and when I visited her at ten o'clock, P.M. the waters had escaped several hours, the os uteri was well dilated, and the chin, which was situated behind the ossa pubis, was descending into the cavity of the pelvis. The head was too far advanced to allow of the operation of turning, and although it was of full size and well ossified, yet as the pelvis appeared capacious and perfectly free from deformity, I determined to trust to the natural efforts so long as no unpleasant symptoms arose from the protraction. The progress was exceedingly slow, and it was not until twenty-four hours after the escape of the liquor amnii, the pains during the whole time having been powerful

and unintermitted, that the *chin emerged from under the arch of the pubis*, the forehead and vertex, *as always happens in these cases*, if nature completes the delivery, being *afterwards expelled*. The face of the child was much swollen, and very livid, and the bladder was twice emptied by the catheter during the labour. Many face cases will be thus terminated by the natural efforts; but it may so happen, that *manual or instrumental aid* will be required. The head may exceed the usual dimensions, and the pelvis may be known to be slightly deformed, and under the standard size. In these circumstances, if the pains are not very severe, and if the head has scarcely descended at all beyond the brim, the os uteri being well dilated, *turning* may be attempted, and, if successful, the feet of the child will become the presenting part, requiring the management peculiar to this order of parturition. We prefer, however, if possible, to rectify the position, and by disengaging the forehead and chin, to convert it into a vertex presentation. For this purpose, we may introduce the right hand into the uterus, placing the

fingers over the vertex, and the thumb upon the centre of the upper part of the forehead. If the head has descended into the cavity of the pelvis, it must be elevated as much as possible towards the brim, prior to any efforts being made to alter its position. This being effected, we may, during the absence of pain, firmly and steadily press the forehead and chin *upwards* and *laterally*, while by the fingers, we depress and draw down the vertex, endeavouring to place it against the sacro-iliac symphysis. The occurrence of a pain will soon inform us, whether we have done good; for if during its continuance, the vertex descends and the face gradually moves upwards, the reduction is complete, and we may safely leave its further progress to the natural efforts. If, however, under uterine action, the face is still descending, similar attempts must with gentleness and caution be renewed, and eventual success will probably be secured.

The *instrumental* management of these cases comprises the use both of the *lever* and *forceps*. If the presentation be early discovered, the lever may, perhaps, by judicious

and skilful application, effect an alteration of position more advantageously than the hand alone. To accomplish this purpose, it must be introduced by the side of the pelvis, and passing over the vertex, it must obtain a firm bearing on this part. We may afterwards depress the occiput, carefully raising up the face, by the fingers of the other hand. If, on the accession of pain, the descent of the head proceeds satisfactorily, there is no further necessity for the employment of the vectis, and the delivery will be terminated as in a common case. When, however, the face is low down, and firmly jammed in the pelvis, the uterine effort beginning to decline, the parts of the mother hot and tumid, and the advance of the head scarcely perceptible, we should apply the forceps, in the manner represented in *plates eleven and twelve*, the blades passing over the cheeks to the occipital part of the head, and the *locking* being effected at the lower part of the face.

Second and third varieties. Where the chin is opposed, either to the right or left side of the pelvis. The general remarks already offered apply to these positions of the face;

we may, however, observe, that if the forceps are employed, we must be careful, when in imitation of nature in a vertex presentation, we make the *half turn*, not to attempt it too early, or before the obstacles opposing the further descent of the head render it necessary; nor is it less important, so to effect it, as to bring the chin underneath the symphysis pubis; thus causing it to resemble the most favourable face presentation.

Fourth variety. Where the chin is opposed to the sacrum. This position of the face is happily of *extremely* rare occurrence, and where it does unfortunately happen, if the os uteri be sufficiently dilated, very early after the rupture of the membranes, we think turning is by far the best method of treatment. We believe, however, that the child will seldom be saved under this presentation, and after the use of the forceps, if they have been unsuccessfully employed, we should prevent any further risk to the mother by opening the child's head, and thus expediting the delivery.

Of the descent of the funis with the head.

This is a complication of natural labour with which we only occasionally meet, although from the sudden rupture of the membranes, and the rapid escape of the liquoramni, events constantly happening, we might not unreasonably expect its more frequent occurrence. A variety of contrivances have been devised for preserving the funis from pressure, but as we shall have occasion again to allude to the subject, we shall only observe here, that if the descent of the funis be early ascertained, we may, after replacing it within the uterine cavity, towards one or other of the sacro-iliac symphises, support it on the tip of the fingers, or by a bit of sponge, fastened to the end of a small piece of cane; and if this can be persevered in for a few pains, the head will most probably descend alone, and the funis may completely escape. If, however, the head and the funis descend *so rapidly* into the pelvis, as *by compression* to endanger the life of the child, or to render turning impossible, delivery by the forceps is our only resource.

Descent of the hand with the head. This also is an unfrequent complication of natural labour. If it be made out, either before, or immediately after the rupture of the membranes, it may generally be converted into a presentation of the vertex. The hand of the child is to be *gently* pressed above the brim, and maintained in its improved situation, by the fingers of the accoucheur, who is not to withdraw them, till by the action of the pains, the head fully occupies the superior aperture of the pelvis. It is easy to conceive, that a contrary mode of procedure will be productive of great danger and difficulty. If the hand be drawn down with the head, under the mistaken idea, that the birth will not be retarded, the case may be rendered one of the most awkward and complete presentations of the arm, not admitting of turning, but requiring the use of the forceps. If from increased capacity of the pelvis, or diminished size of the head, and from not having been called early enough to turn, we determine to allow the labour to proceed, we should, if possible, so place the arm towards either of the sacro-iliac synchondroses, as to diminish, in some

degree, the obstacles opposed to the passage of the head.

In the *second* class of the complications of natural labour, we comprise :

Lacerations of the uterus and vagina. These are most distressing and melancholy accidents, not unfrequently occurring without any anticipation of such an event, and admitting of such uncertain help from obstetric skill, as to have induced some eminent men to leave their reparation entirely to nature. Of the extent to which laceration may proceed, and of the parts in which it may occur, there is great variety, the danger and the painful character of the subsequent symptoms much depending on the size and situation of the rupture. If the cervix uteri and the upper portion of the vagina are only slightly lacerated, which is the most common case, the symptoms will generally be milder and the pain less, although even here the patient may die, than where the fundus is extensively torn, and the child entirely escapes into the uterine cavity. In the first case of *turning* to which I was called, laceration of the *cervix uteri* to a small extent occurred. The patient, an Irishwoman

of remarkably determined and obstinate disposition, was attended by a midwife, who attempted to turn three times in opposition to the struggling of the patient, and during the contractile efforts of the uterus. When I first visited her, the waters had been long evacuated, and the pains had been severe and nearly unintermitted for twenty-four hours, the hand protruding at the external parts: I did not examine, but gave her *sixty* minims of the tinct. opii, and an enema containing *sixty* minims more was thrown into the rectum: on seeing her again in two hours, the nurse informed me, that in a few minutes after the opiate, from having been in most distressing pain, she became suddenly easy, ceased to cry, and almost instantly vomited the contents of the stomach. The face became suddenly pale and cold, the extremities were thrown out, and her breathing was nearly stopped. She complained of palpitation of the heart, was covered with cold perspiration, and would most probably have died, but for a large glass of brandy and water which was immediately poured down her throat. Being now much rallied, I examined with great care, and dis-

covered this circular hole or rent, about the size of a sixpence, in that part of the cervix uteri, between the shoulder of the child and the symphysis pubis. The uterus itself was inactive and flaccid, and I had no difficulty in turning and bringing away a dead child; the mother had a return of the vomiting, and expired in three hours after delivery.

We are not aware of any premonitory symptoms which might warn us to guard against this frequently fatal accident. We can only urge the necessity for *watchfulness*, when the uterine contractions are inordinately severe, that timely measures may be adopted, either to diminish their violence, or safely to hasten the birth. A variety of causes have been assigned for this accident; such as the struggles of the fœtus, the mechanical wearing through of the uterus, in long and severe labours, by pressure and attrition, between the head of the child and the projecting bones of a distorted pelvis, the thinness of the uterine parietes and sudden emotions of the mind. The more probable causes are, *external injury* to the uterus, from violent pressure, blows or falls, and *internal mischief* from

excessive contractile effort, induced by ill-timed and harsh attempts to turn the child, by the awkward and violent employment of instruments, and by the mechanical obstacles of tumours within the cavity of the pelvis, as well as of disproportion between its dimensions and the head of the child. There has been much difference of opinion as to the best mode of treatment. Dr. Denman says, that circumstances have induced him to consider this case particularly; and after much enquiry and reflection, he seems to be convinced, that upon many occasions, the patient would have a better chance, if the case were resigned to the natural efforts, than by any operation or interposition of art; in fact, "that there are more instances upon record of recoveries of women who have not been delivered, than those who have been delivered after rupture of the uterus." In this sentiment we do not concur, and we have no hesitation in stating our belief, that life is preserved, or at least prolonged, and subsequent distress greatly alleviated by delivery. If the child has only partially escaped into the abdominal cavity, through a laceration of the neck of the uterus or at its point of union with

the vagina, the hand should be passed into the abdomen and the child delivered by the feet: and even if the child shall have entirely escaped into the abdominal cavity, through the rupture either of the cervix or the fundus uteri, the same practice must be followed; but if the pelvis be so contracted, as not to suffer the child's head to pass, then *gastrotomy* or *the Cæsarian section* must be performed:—again, if at the time of laceration, the head be engaged in the cavity of the pelvis, the delivery will generally require to be terminated by the *forceps*, or if the child be known to be dead, by the *perforator*.

Lacerations of the bladder followed by sloughing, are happily not of very common occurrence, yet a prolapse of the bladder has been mistaken for the membranes, and punctured accordingly, and I well recollect a case, where a prolapsed pouch of the posterior part of the neck of the bladder, was burst open by the forceps. If the patient survives the first symptoms of irritation and inflammation, the cure will mainly depend on keeping the catheter constantly introduced, so that the edges of the wound shall be preserved as much as possible in a state of apposition.

Mr. Guthrie, of Kilmarnock, published the following case, and we think him entitled to much praise for his good management and perseverance. Mrs. Campbell, aged 23, had been three days in labour, of a first child, before delivery was effected—and that ultimately by means of the forceps. In the early stages of parturition she made water frequently, but towards the end, a total retention occurred, nor could the catheter be introduced. On visiting the patient next day, she complained of an excessive discharge from the vagina, with pain and tenderness of the external parts. She had discharged her urine about an hour after delivery, but had no power of retaining it since. Symptoms of an inflammatory nature now came on, requiring decided depletion, and when these symptoms subsided, the melancholy fact of *sloughing of the bladder* was unequivocally ascertained. The situation of the aperture was about, or rather above the cervix vesicæ—its edges felt soft and irregular—and were painful to the touch. A piece of sponge was introduced into the vagina, as soon as the tenderness of the parts would permit, and applied in direct contact with the

perforation in the bladder. A short elastic gum catheter was next passed into the urethra, and being fixed by suitable bandages, was allowed to remain there, in order to prevent any accumulation of urine in the bladder. In this way the edges of the aperture were brought into more immediate approximation. The report three days afterwards was—"the urine flows entirely by the catheter; sponge completely prevents it from passing into the vagina; feels much more comfortable; considerable discharge of offensive matter from the vagina." Two days subsequently there was "excessive discharge of foetid matter from the vagina, with great pain and tenderness of the external parts, which are now in a state of ulceration—urethra very irritable. The sponge and catheter withdrawn, cleaned, and again introduced. In three days more, the pain and tenderness so great, that the sponge and catheter were again withdrawn by the patient herself. At this time an examination was made *per vaginam*, and the original aperture was found so greatly diminished, as scarcely to admit the point of the finger. With much persuasion, she again submitted to the introduction of the sponge

and catheter, which, in three days more, were withdrawn to be cleaned. They were again replaced. The above treatment was continued, with little variation, for a month, at the end of which time, the aperture in the bladder *was completely shut up*, by a soft but pretty firm cicatrix. The communication was thus entirely obliterated. She was examined five months afterwards, and found perfectly free from complaint.

Tumours in the pelvis have been already treated of in an earlier part of the work.

Convulsions. These alarming seizures, which are generally of an epileptic kind, may occur, either during gestation, at the time of labour, or subsequently to delivery, and as at all these periods they appear to arise from the same cause, they require very similar treatment. They are not at all times preceded by premonitory signs, although in the majority of instances, they are ushered in by the train of symptoms, so constantly attendant on congestion of the vessels of the brain. Patients about to be seized with convulsions, generally complain of fullness and weight about the forehead, tension over the eyes, singing in the ears and indistinct vision.

The pulse is usually strong, full, slow and labouring; there is great disposition to profound and snoring sleep, frequent and deep sighing, and occasionally darting pain in the head, alternating with acutely uneasy sensations in the stomach and bowels. There is not much difficulty in distinguishing genuine parturient convulsions, from those fits of hysteria which so frequently attack nervous and irritable women, during gestation, and sometimes during labour. In hysteria, the pulse is rarely affected, and the symptoms of cerebral plethora and congestion do not appear. It resembles fainting rather than convulsion; is accompanied by the globus hystericus, and never followed by the torpid, comatose condition, which so frequently succeeds the latter disease. The fit of convulsion is sometimes so violent, as to be almost immediately followed by apoplexy, but it more frequently happens, that after a short interval, consciousness is re-established, the paroxysm again recurs, and the patient again recovers; this alternate seizure and recovery continuing for some hours, or even days; a renewed attack being very often preceded by the uterine pains. If the most vigorous

depletion be not early adopted, the brain is permanently injured, evidencing such injury, by total deprivation of sense and by violent and uncontrollable agitation of the voluntary muscles. During the seizure, the face is painfully distorted, the eyes have a peculiarly wild and rolling expression, the breathing is hurried and accompanied by a hissing noise, and the teeth are fixed. Notwithstanding that most women recover from this disease, if *venesection be boldly employed*, we must give a cautious prognosis, for if there be not an almost entire return of sensibility between the paroxysms, and an absence of that intensely acute pain in the head, which is so frequently associated with convulsions, the danger is of the highest kind. The following case, which happened to us a good many years ago, we shall present to our readers; it is perhaps an *average* one, and we think it more useful to illustrate the history and treatment of any affection by *one* such case, than by the narration of instances of extraordinary and rare occurrence, as we feel assured, where the examples are genuine and the treatment correct, practitioners will verify or amend the rules by a reference to

their own experience. Our great aim is to afford information which will be *generally* available at the bed-side of the patient, and to render our observations so *practical*, that their truth may be tried in almost every case ; for it is by no means difficult, when the principles of treatment are well understood, to advance from the management of common, to that of singular and difficult morbid occurrences.

Mrs. A—, æt. 18, was slightly indisposed during her first pregnancy, at the end of January, and as she was of full habit, and the pulse strong and quick, twelve ounces of blood were abstracted from the arm. There were no further symptoms of labour till the 10th of February, when, after slight dorsal pains, she was seized with convulsion, induced probably by the cries of a friend, about to be confined in the room above. The face was much distorted, the hands firmly clenched, and the pulse slow and labouring, the bowels open and regular. I bled her to twenty ounces, and the æther wash was sprinkled very freely over the forehead and face. She was somewhat relieved by these measures ; but at three o'clock, P. M., eight hours after the first

attack, the fit returned, and the bleeding was repeated to *twenty-four* ounces; an enema was ordered, and slight labour pains supervened; at *five* o'clock she was again convulsed: the bleeding was repeated to *ten* ounces, and the following powder was exhibited:—

R Calomel ppt. gr. v. Pulv. Jalapæ, gr. xxx.

Pul. Potass. Nitrat. gr. x. M. ft. pulv.

On examination soon afterwards, the os uteri was found not at all dilated, though the pains were forcing and strong. The bleeding considerably relieved her, although the dull heavy pain over the forehead is not entirely removed. The *muscæ volitantes* have disappeared. 8 *P. M.* Dr. — saw her, approved of what had been done, and directs the bleeding to be cautiously repeated if the fits return. The hair was now shaved, and cold lotion applied to the head; and as the bowels had not acted, a soap enema was thrown up. The head has descended rather lower, but there is no dilatation of the os uteri, nor does the cervix uteri appear at all disposed to relax and develope itself. 11 *P. M.* Has had three or four copious

evacuations, occasional slight tremors, pulse 140, and small; and some degree of coma: \mathfrak{mxxx} of tinct. opii. were now given, and a blister was applied to the nape of the neck.

Friday morning, Feb. 11. The action of the bowels has been kept up, during the night, by clysters. Early this morning, she became delirious, and made attempts to get out of bed. She is at present in a comatose state; skin cool, countenance pale and dejected; pulse small and quick; urine easily voided. 1 *P. M.* Sufficiently sensible to answer questions. Eye dull, pupil not very easily stimulated; skin hot; tremors continue slightly at intervals; os uteri still closed. 6 *P. M.* Continues to improve. Less pain in the head, and much more sensible; pulse 110, and soft; has severe dorsal pains. 12 *P. M.* Pains are regular, the os uteri is *fully dilated and soft*. The membranes were now ruptured by the finger; and she was, at one o'clock, A. M. safely delivered of a healthy boy. Sumat. tinct. opii. \mathfrak{mxl} . *Saturday morning*. Complaining much of pain in the head; pulse quick, but neither full nor strong.

R Calom. ppt. gr. v. Pulv. Antim. gr. v.
 Pulv. Jalapæ, gr. x. M. ft. pulv. ex decocto hordei statim sumend.

App. Hirudines, No. x. fronti capitis.

In *ten* days from this time she had quite recovered.

We wish again to urge upon the practitioner the extreme importance of *early and large bleeding* in convulsions during labour, the quantity, not being so much regulated by the number of ounces, as by the effect produced, and it must also be remembered, that there is rarely any safety for the patient, till the delivery is accomplished. If the os uteri be fully dilated and the external parts free from rigidity, the *ergot* may be advantageously used; indeed, Dr. Waterhouse, of Philadelphia, affirms, that this remedy alone is most efficacious in the cure of puerperal convulsions. If, under the above circumstances, the symptoms are very urgent, and the child is still at the brim, turning may be attempted, or if from its producing a recurrence of the convulsions, this measure be deemed inadvisable, we may use *the long forceps*, the perforator being reserved as a “dernier resort” in extreme

cases. Again, if the head be low down in the pelvis, and the convulsions are increasing in severity, we can have no hesitation to expedite the birth by the employment of instrumental aid.

CLASS II.

DIFFICULT LABOUR.

ORDER I. *Presentations of the breech, of the superior or inferior extremities, or any combination of these presentations which generally require only manual aid.*

CHAP. I.

SECT. I. *Presentations of the inferior extremities.*

In this order of labours the early knowledge of the presentation is of great importance, and we are not aware of any other method by which it can be ascertained than by examination per vaginam. If, when the finger is at the os uteri, we cannot feel any part of the child, we presume there is something unusual, and this opinion is strengthened, when, during pain, the membranes are thrust down into the vagina, in the shape of a cone, or like the finger of a glove, there being still no distinct presentation. Under these circumstances, a patient requires great attention from her accoucheur, as much of

the facility of delivery will depend on the period when assistance is afforded. The os uteri being altogether deprived, except in presentations of the nates, of that sensible impression which is made upon it by the firm and round head of the child, and which may probably, in natural parturition, be one great cause of its early dilatation, the first stage of this order of difficult labour, generally requires a long time for its completion. Presentations of the arm alone, or perhaps when complicated with some other parts of the child, absolutely require turning. Presentations of the breech, and of any part of the inferior extremities, will pass through the pelvis, demanding little if any more assistance than some of the presentations of the head: indeed, we are inclined to believe, with the exception of the greater risk to the child, that face cases are much more difficult and painful than presentations of the breech. The operation of turning, the first great improvement in obstetric science, is one oftentimes of considerable difficulty, and always of some degree of risk and increased pain. The precise time and circumstances under which it is to be attempted

have excited much controversy, although the opinions of practitioners are now pretty unanimous on certain important points.

Where the os uteri is undilated, and the genital organs rigid, turning ought never to be attempted. Where, however, the os uteri is dilated, even if the vagina and the perinæum are only beginning to expand, turning may be commenced; as, under any circumstances, the vagina and the parts about the outlet cannot receive their full dilatation, till the nates are making pressure upon them. Supposing the os uteri to be expanded to the size of a dollar, we may, with great care, begin to turn. If the membranes are ruptured, and the liquor amnii has escaped, the contractile efforts of the uterus are generally more powerful, and, from its closer approximation about every part of the child, the difficulties of the operation are much increased. Our own practice, in these cases, is to make out as early as possible the presenting part, and, if the pains are at all powerful and frequent, not again to leave the patient, so that we may seize the most favourable opportunity for the introduction of the hand. If the os

uteri is not dilated, of course, we wait ; and, if it continue rigid, we employ the means already prescribed to induce a contrary state. If, however, the mouth of the uterus is sufficiently expanded, and the other genital parts are at all in a favourable condition, we proceed to the delivery, much preferring that the waters shall not have passed off. Since the time when Ambrose Parey adopted the comparatively safe and easy operation of turning the child, and delivering by the feet in arm and shoulder presentations, the superiority of that mode of terminating the labour, over others previously followed, has been so generally acknowledged, that it may be said to have become a universal practice. Few men in the present day, will rely on the unassisted powers of nature for accomplishing the patient's release, and fewer still, will attempt *the dangerous and often impracticable expedient* of returning the shoulder into the uterus, and bringing the head to the pelvic brim. Although the merit of having first suggested this improvement in practical midwifery, be not conceded to Parey, still it must be allowed, that he is entitled to our warmest

praise, for having by his recommendation made it generally known, and by his personal example proved its safety and its efficacy. So evident indeed are the advantages of Parey's operation, that its revival, and adoption may be considered almost an era in the history of midwifery. It is not denied, however, that in some cases of shoulder presentation, the labour has been concluded by the natural efforts alone, unaided by manual interference. Dr. Denman was well aware of this fact, and has described the case as being a "spontaneous evolution." This talented and observant practitioner considered, that a true evolution actually took place; he thought that the foetus was too large to pass through the pelvis doubled; that the breech, being acted on by the continued uterine contractions, was gradually forced lower into the pelvis; and that at the same time the shoulder retreated into the womb, occupying the space which had been evacuated by the breech. Dr. Denman's explanation was considered perfectly correct, and generally received by the profession, until Dr. Douglas of Dublin,

in a pamphlet, first published in 1811, proved that the description was inaccurate; he observes, that it is incompatible with the received ideas of uterine action, to suppose that the uterus, when contracting so powerfully as to force down that part of the child which was at its fundus, could at the same moment form a vacuum, into which another portion already low down in the pelvis, should recede." The uterus indeed embraces and closely surrounds the foetal body; the shoulder cannot recede either into the uterine or vaginal cavities, since the space evacuated by the breech no longer remains, but is destroyed by the continued uterine contractions.

To Dr. Douglas, therefore, we are indebted for a true history of the process. He has clearly demonstrated, that the foetus does pass the pelvis in a doubled position, describing a partial evolution indeed, and turning on the lowest point of the symphysis pubis as its centre. He has given to the profession the following observations: "In all the cases related by various practitioners, on the subject of the evolution, it is acknowledged that shortly before its occurrence the shoulder of the

child had been forced very low into the pelvis ; and that the thorax had occupied so much of its cavity, as to preclude the practicability of the hand of the accoucheur being passed up into the uterus, for the purpose of turning, as is usually done in such presentations. The shoulder and thorax, thus low and impacted, instead of receding into the uterus, are at each successive pain, forced still lower, until the ribs of that side corresponding with the protruded arm, press on the perinæum. At this period, not only the entire arm, but the shoulder also can be perceived externally, with the clavicle lying under the arch of the pubis. By further uterine contractions, the ribs are forced more forward, appearing at the os externum, as the vertex would in a natural labour, the clavicle having been by degrees forced round on the anterior part of the pubes, with the acromion looking towards the mons veneris. The body of the fœtus then is bent into a curve ; the head rests above the pubes internally ; the clavicle presses against the lowest point of the symphysis pubis partly externally ; the arm and shoulder are entirely protruded ; the acromion is turned up towards the mons veneris ;

and a part of the side of the thorax closes the genital fissure. The abdomen and loins at the same time, occupy the lower part of the pelvis, and the breech has either entered the pelvic cavity or lies at the brim, ready to descend into it. By a continuance of uterine action, the breech is expelled, sweeping the hollow of the sacrum, and distending the perinæum to a vast extent. It will be evident, that, during the expulsion of the foetus in this doubled form, the perinæum must be placed much more on the stretch than happens in a natural labour, or a case of original breech presentation." The spontaneous evolution is not to be expected where there exists a contracted pelvis; it can only take place when that cavity bears a large proportion to the size of the foetus, and is most likely to happen under premature labour. From the pressure which the foetal body must necessarily suffer, it is not likely that the child will be born with life. Some cases, however, noticed by Dr. Denman, sufficiently prove that the compression is not necessarily fatal to the infant.' The longer the time occupied in the completion of the evolution, the more powerful the uterine ex-

ertions which are required to perfect it, and the smaller the mother's pelvis, the less probable is it, that the child will be preserved. The knowledge that the delivery may possibly take place, under the circumstances detailed above, must be considered a great point gained in practical midwifery, since, in a few of those cases, where the attendant is unable to introduce his hand into the uterus, in consequence of its firm contraction, he may probably trust with safety to the natural powers; especially, if together with a small or premature foetus, there be a large pelvic cavity, strong uterine action, and an apparent disposition in the child to pass double. But, should these fortunate occurrences be wanting, he may have recourse to another mode much less likely to injure the mother than the forcible passage of the hand into the uterus, under a state of strong and permanent contraction; namely, that of lessening the bulk of the foetus, by taking away the viscera of the chest and abdomen, and afterwards imitating the "spontaneous evolution," or in other words, extracting the body in a collapsed state.

Let it not be supposed, that we should recommend this operation to supersede the common practice of turning under ordinary cases of shoulder presentation, but that it should only be resorted to by the practitioner in those rare instances, when being called upon to deliver, perhaps many hours after the rupture of the membranes, he finds any continued attempts at turning would be attended with the danger of uterine laceration.

The operation is in itself easily performed; and the appalling feeling which every man must experience, on perforating the head of a fœtus, while ignorant of its life or death, can here have no place; because the pressure on the child's body must have deprived it of vitality, before the operation can have become necessary. The powerful objections, therefore, which obtain against the use of the perforator in general, are not applicable in these cases. No other instruments will be found necessary than the perforating scissors and the crotchet; the scissors are much preferable to the perforators in common use, as they possess a cutting edge both externally and within; with them, therefore, the separation of

the viscera from their attachment is more easily effected. The woman having been placed on her left side, the position most suitable for the performance of obstetrical operations, as large an aperture as possible must be made into the chest, by the division of one or more ribs; and through this opening, the heart and lungs must be extracted; the diaphragm must then be perforated, and the liver and intestines may be easily removed. The bulk of the fœtus being thus reduced, the body will collapse; and, if the uterine efforts continue, the evolution as described above will most probably speedily occur. Should the pains, however, have ceased, and the breech not descend after the removal of the viscera, the crotchet may be introduced through the aperture, and fixed within on some point of the fœtal pelvis; sufficient force may then be applied to extract, and the breech will be protruded, sweeping the sacrum and perinæum.

This operation, Dr. Francis Ramsbotham, whose views in relation to it we have embodied, has performed three times, (and he has been present on two other occasions when it

was had recourse to); nor has he found any particular difficulty attending it.

The separation of the head from the body at the neck, is another mode by which delivery may be effected in cases of shoulder presentation, when the contracted state of the uterus prevents the child being turned. In the case requiring this, as well as the preceding operation, the death of the child must have already taken place, and the objections against it are the difficulty of its performance, and the unsuitableness of the instruments which have, until lately, been proposed for the purpose. The scissors invented by the late Dr. Coombe have not been found to answer. The best instrument with which I am acquainted, is a cutting hook made some years since by Dr. Ramsbotham, Sen. of which a correct representation is given in Dr. D. Davis's excellent work on Instrumental Midwifery. This instrument possesses the curve of a large sized blunt hook; its cutting edge extends throughout the inner side of the whole curve, to within half an inch of the extremity; and it is intended to be introduced over the neck, being carefully directed by

the finger. When applied, it is to be used as a saw, and by a gradual pressure downwards, the vertebræ and soft parts are divided. On the separation of the head, the body may be extracted by means of one or other of the arms, and should the pains have subsided, the head may afterwards be removed by a blunt hook or crotchet, introduced either into the foramen magnum or the mouth. The possibility of any injury to the soft parts of the mother, may be prevented by the index finger of the left hand being kept against the blunt instrument during its action. Should the pelvis be filled by the foetal chest, or abdomen, exvisceration will be most expedient; if, on the contrary, the neck originally presented over the centre of the brim, which must very rarely occur, the best mode of proceeding will be to decapitate the child. In one instance, in consequence of the narrowness of the pelvis, even after the child had been completely exviscerated, the body would not pass; we were therefore obliged to separate the head before extraction could be effected.

Of the presentation of the nates.—Many causes have been assigned for transverse or

cross labours, such as the obliquity of the uterus, the shortness or the circumvolutions of the funis round the body of the child, and shocks affecting the mother during pregnancy. It is, however, very doubtful whether any of these circumstances influence the precise situation of the fœtus, as we have frequently met with every one of these occurrences, and still the head has been the presenting part. We are more disposed to attribute them to some peculiarity in the manner of descent of the ovum into the womb, or to some disproportion existing in the first months between its various parts. An early examination will generally enable us to discover the presentation, before the rupture of the membranes, and when the superior extremities lie over the centre of the pelvis, this is of no small importance. The breech may be distinguished by the pulpy softness of its feel, by the cleft between the buttocks, by the parts of generation, and sometimes by the discharge of the meconium with the liquor amnii. The head, and more especially the face, is sometimes confounded with the breech. The roundness and hardness of the head, together with its sutures and fontanelles, and the inequalities

of the face, will enable us to form a correct diagnosis between the two parts.

Labours, where the head of the child did not present, were as we have already seen greatly dreaded ; and, till a very much later period than the time of Celsus, thrusting up the part, and endeavouring to bring down the head, was the common practice. Celsus gives the following recommendation :—" *Et si clunes os uteri urgere cæperunt, iterum retro repellendæ sunt, conquisitusque, pes ejus adducendus.*" Portal, who practised with great celebrity in Paris, about 1668, entertained correct notions, and gave very judicious directions for the management of presentations of the feet and nates. He says (chap. iv. p. 211), " If the feet of the child come foremost, search the inward orifice of the womb, which if you find thick and not open as yet, you must not be too hasty, nor hazard any violent delivery of the child, but stay till the womb is sufficiently open to afford a passage for the birth. When the buttocks come foremost, you must not be impatient; for, though the labour proceeds very slowly, yet it is not much more difficult than a natural birth; whence it is that our midwives say, by way of proverb, that where

the buttocks can pass the head will follow of course.* The position of the child in this case is doubled, with the thighs upon the belly; and the passage being once opened for the nates, by the reiterated pains, the head follows without much trouble; you must take hold of the feet as soon as they come out, and afterwards the head and shoulders."

The erroneous and generally fatal practice, as to the child, of pushing up the nates, still continued: so difficult is it to shake off prejudices handed down from antiquity. Smellie was evidently doubtful both of the natural powers and of the standard capacity of the pelvis in relation to breech cases; and consequently we find him giving directions about stretching the external parts, dilating the os uteri, pulling down the legs, and raising and pushing up the nates. Dr. Hunter says, "When I first began practice, I followed the old doctrines in breech presentations, although I did not like them, but yet dared not broach new ones till I

* This, however, is erroneous: Dr. Francis Ramsbotham was called in consultation only a few days ago, where at the full time, the breech passed easily, through a pelvis not $2\frac{1}{4}$ inches in its conjugate diameter, but where, in consequence of detention of the head, the perforator was necessarily employed.

got myself a little settled in life ; at this time I lost the child in almost all the breech cases, but since I have left these cases to nature I always succeed." The course generally pursued in these presentations, is as follows : the breech enters the pelvis, one of the nates being pushed rather lower than the other, one ilium being situated towards the one, and the other ilium towards the opposite side of the mother's pelvis. Having fully entered the pelvic cavity, the nates, after the manner of the head in natural labour, impinge on the inside of each tuberosity of the ischium, and from the same cause are turned, the one following the course of the hollow of the sacrum, the other passing out and appearing externally under the arch of the pubis. There is now no difference of opinion as to the propriety of leaving these cases to the natural efforts ; for, although the nates do not accommodate themselves so completely to the shape of the pelvis, yet they do not require so much room as the head ; and if the labour, especially in its first stage, be allowed to proceed uninterruptedly, the nates will ultimately be protruded through the external parts ; when the case must be managed as a

footling presentation. We have seen many presentations of the nates; and although the protracted birth of the head, where every measure had been employed to facilitate its expulsion, has rendered us less successful than Dr. Hunter, we are quite convinced that the preservation of the child will greatly depend on our little interference in the early part of the process.

Of presentations of the feet.

These have generally been regarded as the simplest and probably the safest of all the preternatural presentations, so far as regards the mother. The child, however, is in jeopardy, more particularly if it be a first labour, and the mother be rather advanced in life, and of rigid fibre. The foot may be distinguished from the hand, by the weight and resistance it gives to the touch, by the shortness and evenness of the toes, except the prominent great toe, and by the projection of the heel. The early delivery of the head is here of vast importance, as, between it and the pelvis, the umbilical cord may suffer fatal compression. We are not to hasten the delivery of the child's body under the

presumption, that by so doing, we diminish the risk of pressure on the cord; for, on the contrary, its slow progress dilates the parts of the mother, and affords greater space for the passage of the head. The rule, therefore, is, not to interfere till the nates are born; not to rupture the membranes; and supposing we are not called till the waters are evacuated, and the feet in the vagina, not even then by pulling them down, to anticipate the effects of the natural pains. If, when the umbilicus passes beyond the os uteri, the funis does not descend, a portion of it should be drawn out of the uterine cavity, that it may be stretched and compressed as little as possible, when the head emerges from under the pubis:

If the nates are fairly in the world, the period to render assistance has arrived; and the rules for its bestowment are equally applicable to breech as to footling cases. A warm napkin, or flannel, is to be wrapped round the lower extremities of the child, and by swaying it a little backwards or forwards, or from side to side, its descent is facilitated. We have already explained the importance of the turn which the head makes in descending from the brim into the cavity of the pelvis

in natural labour. In presentations of the breech and feet this turn is equally desirable; and if, when the nates have reached the external parts, we find the toes pointing towards the symphysis pubis, we know the head is unfavourably situated. Grasping the parts firmly, therefore, having previously covered them with a napkin, we wait for the next pain, and then such an inclination is to be given to the body of the child, as shall direct its abdomen towards its mother's spine. Some practitioners have thought the arms ought not to be brought down, alleging that, while extended by the sides of the head, they prevent the os uteri from contracting round the neck, and that by extracting them we endanger their dislocation or fracture. In these opinions we do not concur; for, if the early part of the labour has been deliberately conducted, the os uteri will generally be too fully dilated to allow of its contraction round either the neck or the upper part of the child's head. It may so happen, if the pelvis be large and the head small, that the arms and cranium of the foetus may with difficulty be brought away together; but as thus situated they occupy much room, producing delay and a

compression of the softer parts, we prefer their previous extrication. When, therefore, the axillæ of the child are on a level with the external genitals of the mother, the body of the foetus must be placed completely out of the way, and two or more fingers may be passed to the bend of the elbow, when the arm may generally, with some little management, be brought down over the face. Having accomplished the birth of one arm, there is seldom much difficulty in getting away the other, and thus the passage of the head is facilitated. If, however, there are any obstacles to the birth of the cranium, and the uterine efforts alone are seldom sufficient for its expulsion, it is important that assistance should be speedily afforded, as compression on the cord will quickly destroy the life of the child. For this purpose, we pass two or three fingers of the right hand over the nape of the neck, and insinuate a finger of the left hand into the child's mouth; by these means we depress the chin, alter the position of the head, and better adapt it to the pelvis; and, by a moderate extracting force, we bring forward the head, taking care, lest by violence we injure the foetus.

In cases of extreme difficulty, the blunt hook is required; or a silk handkerchief passed over the bend of each thigh, giving us a complete command of the parts, may be employed; by either of these means we may, co-operating with the pains, draw down the nates to the outlet. I was lately called to a breech case by one of Dr. Blundell's pupils, in the management of which I had extreme difficulty. The woman was forty years of age, having a pelvis greatly deformed in its antro-posterior diameter. The waters had been evacuated many hours—the os uteri was fully dilated—the womb was contracting powerfully—and the breech might perhaps be considered as having just entered the cavity of the pelvis. She had three times previously been delivered by instruments. Hoping, however, that as the breech occupies less space than the head, as she was a strong woman, and as no unpleasant symptoms had occurred, the breech might be thrust into the world by the natural efforts, I determined to give a few more hours for their exertion. The bladder was emptied by the catheter, and the rectum was unloaded by a clyster. Six hours elapsed without any further advance

of the presenting part, and I determined to use the blunt hook. Having fixed it successively in the fold of each thigh; and, having drawn down, with the greatest caution, for upwards of three quarters of an hour, very little progress was made; nor was it till the point of the instrument was hitched over the sacro-iliac synchondroses that I could deliver the breech. It ought to be stated, that during the process there were intervals of rest, and the efforts at extraction were temporarily intermitted, when the pulse was getting above 120 or 130: the child had been dead some days.

Of Presentations of the superior Extremities.

There are no cases in obstetric practice requiring a union of firmness and skill in a higher degree, than presentations of the superior extremities. If they are discovered early, and their treatment be commenced under the most favourable circumstances, great tact and delicacy are necessary to avoid injury to the uterus and softer parts. And whether the hands, the elbow, or the shoulders present, they cannot pass through the pelvis without some alteration in their posi-

tion. We have already noticed, as an era in the science, the partial approximation to the present plan of treatment, in the turning of a dead child by Celsus, although the principal merit of its revival and complete establishment, as an invariable rule, must be given to Ambrose Paré; who enjoins in all these presentations to turn the child and to bring it into the world by the feet. Dr. W. Hunter, believing that the parts would be much more dilated for the subsequent passage of the head, if the breech was first expelled instead of the feet, recommended to his pupils "to introduce their hands into the uterus, and gently to put up the arm and to turn the child into a breech presentation. Reduce it, if possible, to a perfect breech case, that it may come more gradually, on account of the head and navel string, lest you strangle the child. If, however, you find this impracticable, let it come footling, but sustain the child at the hips as long as you can, they being, next to the head, the largest and most unyielding part." In these opinions it is scarcely necessary to say we do not concur.

If there be perfect agreement, as to the way in which this operation is to be performed, there is great diversity of opinion as to the precise time when it shall be undertaken. Suppose we find the hand slightly protruding through the os uteri, the membranes unbroken, and the os uteri fully dilated, there need be no hesitation. The arm of the operator is to be bared and lubricated with some unctuous substance; and having, if they require it, gently dilated the external parts, the left hand may be slowly carried to the os internum, taking care to enter the uterine cavity during the absence of pain. The membranes are now to be ruptured, and the hand will come in immediate contact with the upper part of the child. Having reached the feet, the operator must be careful so to draw down the abdomen of the child, that in passing the brim, it may so adapt itself to the pelvis, that one ear shall be towards the sacrum and the other behind the symphysis pubis. When the head has fully entered the cavity of the pelvis, the face should be *gently* turned into the hollow of the sacrum, and allowed to escape, sweeping the perineum, the forehead being the last part expelled.

Where the waters have been long evacuated before the practitioner sees his patient, the *os uteri not fully dilated*, and the pains *vehement and quick*, turning must not be attempted. We are aware that some practitioners do not concur in this opinion, urging that the uterus will most probably be ruptured by the continuance of the pains, if the child remain in this untoward position. The danger of rupture from delay, cannot exceed the risk of laceration, were the hand, for the purpose of turning, to be introduced into a uterus so powerfully contracting. In these cases, and I have seen several, I bleed the patient, if at all plethoric, to fourteen or twenty ounces, and follow up the abstraction, by sixty or eighty drops of the tinct. opii; by these means the uterine action will most probably be much diminished, and then the turning may be safely attempted. It is urged that, although the uterus be not ruptured, yet the continuance of the pain will force the arm, the shoulder, or perhaps the head of the child so firmly into the uterus as to render it impossible to turn, even when its inordinate action has ceased. We are quite alive to the

difficulty and risk which attends this jamming of the foetus into the pelvis; but we think it less than what would accrue from thrusting the hand into this viscus when rigid, powerfully contracting and irritable. We have seen one case where attempts had been made *during the contractile efforts*, to rectify the position of the child. Opium alone had been given, without any previous abstraction of blood. Several attempts proved unsuccessful, and eighty drops of laudanum were exhibited, the woman being undisturbed for some time; after this period the child was extracted with ease, but the uterus had ruptured, and she died a few hours after delivery. The hands may be distinguished by their flatness, thickness, and breadth, by the length and inequality of the fingers, by the shortness of the thumb, and by the thumb bending into the palm of the hand.

CLASS II.

ORDER II.—*Labours which cannot be completed without the aid of extracting instruments, of which some are designed to save the lives, both of the mother and the child, while others are intended to preserve the life of the mother at the expense of the life of the child.*

SECT. II. *The forceps.*

We have already considered lingering labour as dependent on one of two causes, either on diminished power, or increased resistance; and, when either of these exist to so great an extent as seriously to retard the progress of parturition, the skill, the promptitude, and the experience of the accoucheur are immediately in exercise. If after a fair trial of every expedient, which the peculiar circumstances of the case may suggest, and after having allowed the fullest exertion of the natural powers compatible with the safety of the woman, the labour makes no advance, we must have recourse to instrumental aid; and while it is peculiarly desir-

able, that this should not be prematurely bestowed, it is not less so, that a timid dread of the use of instruments, should not deprive the patient of her only chance of escape, from the generally fatal consequences of a too protracted labour. We do not deny the danger arising from the forceps and lever in the hands of hasty and injudicious practitioners, but surely, when the principle of their employment is well understood, when the obstetric properties of the pelvis, and its relations to the head of the child, are thoroughly comprehended, and when the different axes of the brim, the cavity and the outlet, are known to originate a necessity for altered directions of the extracting power, there cannot, at least there ought not to be induced any serious injury by instrumental aid. We are fully aware that the necessity for the forceps seldom occurs, that where the deformity of the pelvis is not ascertained to be excessive, where it is a first labour, and where no urgent symptoms are present, full time should be allowed to the exercise of the unaided powers of the uterus; and we believe, when the early stages of labour are well managed, and where there is no undue inter-

ference, either from timidity or haste, the cases requiring the use of extracting instruments will be few indeed. Yet there are labours which cannot be terminated by the natural powers, where, from disproportion between the pelvis and the head, from rigidity, from hæmorrhage, or from some deficiency in the expulsatory power, the performance of duties is required from the practitioner, which he is solely enabled to discharge, because he has studied the principles of midwifery, and is intimately acquainted, not only with natural but difficult parturition. These are the cases which distinguish the able and scientific accoucheur from the man who thinks the practice of the obstetric art undeviatingly simple and easy, and who at length discovers, that he has neglected to acquire that knowledge, without which, the safety of his patients, and his own character, will soon be compromised. It is here, that officious interference, the neglecting in the early stages manually to remedy a mal-position, the exhibition of stimulants under a mistaken idea, that they impart strength, with many other errors equally pernicious, render that labour difficult and instrumental which,

under other treatment, might have been concluded by the exertion of the natural powers. Writers have been accustomed to enumerate a variety of appearances, which they have considered as presumptive signs of difficult labour, but the least reflection must convince us that as women of every form, of every complexion, and of the most diversified mental and physical powers and dispositions, have both natural and difficult labours, the knowledge of these supposed indications cannot be of any great importance in actual practice. A necessity for artificial aid is principally arising, *first*, from an excessive degree of those symptoms which have been already described under lingering labour; and which, from their continuance, induce such a powerless state of system as to destroy all hope of a safe termination by the natural powers. Here the pains become weak, short, and inefficient, producing no effect on the head of the child; sometimes they are entirely suspended; and although their cessation *within the first twenty-four hours* does not justify the use of instruments, as it may be only temporary, *yet if it occur at the end of the second or*

third day, if the pulse, the countenance, and the general appearance of the woman are expressive of extreme debility and fatigue, a strong presumption is afforded, that we have trusted sufficiently long to unassisted parturient effort. If, in addition to these symptoms, we have head ache, mental inquietude, shivering and vomiting, a pulse of 120 or 130, furred tongue, a hot dry skin, great thirst, abdominal tenderness, heat and soreness in the vagina and os uteri, we may feel assured our patient has approached to a state, from the evil consequences of which, instrumental aid will alone deliver her.

Second. From distortion of the pelvis, existing in every degree, from the slightest intrenchment on its capacity, to absolute deformity, creating of itself, a disproportion between the relative size of the foetal cranium, and the canal through which it must pass. Here the pains may be for many hours *expulsive* and *powerful*, and the head may have been so far influenced by them, as to have become firmly wedged amongst the bones of the pelvis, interrupting the functions, both of the bladder and rectum. It is needless to remark,

that the necessity for instrumental aid in these cases, will depend on the occurrence of similar symptoms to those already described, but they will also frequently demand the use of the perforator. We have ever thought, that deliberate reflection on the circumstances in which a patient is placed by protracted and difficult parturition, a *watchful* observance of the obstacles opposing delivery, and of the extent to which they have been or are likely to be surmounted by the natural efforts, and a correct knowledge of the pelvis, of the presentation, and of the precise situation of the child's head, will never allow us long to hesitate, as to the time, when we are to employ instrumental aid. Before particularising the instruments in modern use, we shall make a few *general observations* applicable to every case of instrumental labour, and if on this *very* important subject, we do not enter into the same extent of detail as our predecessors, it may be considered entirely attributable to the self-evident character of many of the precepts, and to the collateral illustrations they receive from the preceding parts of the work.

Instruments ought never to be used without apprising the patient's friends, and *very* rarely without the cognizance of the patient herself. The bladder and rectum are to be previously emptied, not only to enlarge as much as possible the capacity of the pelvis, but to prevent the risk of injury to these parts themselves. We ought, however, to observe, that in some instances the catheter cannot be introduced without great bruising, and perhaps laceration; here the attempt to pass it into the bladder must be abandoned; and a fresh reason is supplied for the *early* use of the forceps, as if their employment be too long deferred, rupture of this viscus may occur. The first stage of labour must be completed, and the os uteri and perinæum in a dilatable and yielding condition. It is a rule in the use of the forceps, to be *entirely* guided by the circumstances of the mother, or rather no attempt must be made to save the life of the child, when the mother may thereby be placed in jeopardy. The assistance given by instruments, should co-operate with the contractile efforts of the uterus; and if the pains have entirely ceased, intervals of rest must be observed; and it will be attended

with advantage, to watch the pulse, and to pause when it is exceeding 125 or 130. The extracting efforts should always be made in the direction of the axis of the pelvis ; so if we are employing the long forceps, and the head is above the brim, we should draw down in a line towards the coccyx ; but, when the head is approaching the outlet, the direction of the extracting force must be forwards, or towards the pubes.—The time occupied in instrumental deliveries, greatly varies ; for, while some may be safely terminated in a very short period, others require perhaps an hour, or even more, for their completion.—The usual obstetric position will do sufficiently well for instrumental purposes ; the nates should be brought close to the edge of the bed, and the knees should be drawn up at right angles with the abdomen.—When we can feel the ear in a vaginal examination, the case is manageable by the forceps ; as its blades, being twice the length of the finger, will embrace the head, except where syncope is occurring from hæmorrhage, the ear may have remained in this situation some hours before the forceps is absolutely required.

It must be remembered, that the foetal cranium cannot bear more than a moderate degree of compression, it is therefore highly important, that in our extracting efforts, we do not approximate the blades of the instrument too closely. On this account we prefer Dr. Hopkin's forceps.—The traction should be from blade to blade, that each may act as a lever upon the head, and not upon the soft parts of the mother.—The extent of motion of the handles, in order to aid the extracting efforts, must depend on the distance of the head from the outlet; if the head be high up towards the brim, the extent of motion must be less, or the soft parts of the mother will be injured, but as it approaches the external parts, it may be increased.—There is no necessity to terminate every labour by the forceps, where they have been used at its commencement, for it very frequently happens, that the difficulty is situated in some particular point of the pelvis, and most generally at the brim; this surmounted, the completion of the case may be trusted to the unaided efforts of the uterus; and if these should by any unto-

ward event prove insufficient, the forceps is easily re-applied. The instruments now in use are :—

1st. Those intended to save the life both of the mother and the child ; they consist of the

Long forceps,
Short forceps,
Vectis, and
Blunt hook.

2nd. Those in the use of which the life of the child is sacrificed to the safety of the mother ; they are the

Perforator,
Craniotomy forceps,
Crotchet, and
Scalpel.

Cases of powerless labour such as we have already described, presentations of the vertex, and of the face, forehead, and ear, are all manageable by the forceps or lever, if circumstances do not exist, rendering the employment of the perforator necessary.

Of the long Forceps.

This instrument we consider extremely valuable, and although capable of great and dangerous abuse, where the power it bestows is ignorantly employed; we think it will ultimately entirely supersede the short forceps, and to a great extent the lever. There can be no doubt, that many of the difficulties of parturition, for the removal of which the *perforator* has *often* been employed, were cases, in which the head, owing to some contraction of the brim, could not, by the unassisted efforts of the uterus, be propelled into the cavity of the pelvis. The practitioner in these circumstances, unacquainted with the value of the long forceps, would wait probably for some considerable time; but finding, that the head made no advance, perhaps, that not *one* third of its circumference was encircled by the brim, and knowing that it was impossible to reach it by the common or short forceps, and that exhaustion and other dangers might be induced by further delay, feels little or no hesitation in *unnecessarily* sacrificing the life of

the child to the safety of the mother. All instruments may be rendered dangerous, if too early and rashly used; yet we think, that experience is decidedly in favour of the greater safety to the mother, from their too early, than from their procrastinated employment. Rupture of the uterus, abdominal and local inflammation, terminating in gangrene and sloughing, irreparable exhaustion of the system, and a series of other events not necessary to be enumerated here, may all be occasioned by a too protracted difficult labour. Indeed we are sometimes almost induced to believe, that great evil has arisen from the multiplied and fearful associations which have been so invariably connected with the use of instruments. Some practitioners are thereby deterred from even thinking of their employment, till a period has approached, when little good can be anticipated from their aid. Others consider it so superlatively difficult to determine the cases proper for their use, and the precise time and manner of their application, that they think it unnecessary to acquire a thorough knowledge of the principles on which instrumental labour can alone suc-

cessfully proceed, not remembering, that in some instances, valuable lives may be entirely dependant on their sole and unaided exertions, and that before they can obtain the assistance of another practitioner, their secret source of reliance, the proper moment for interference may have been finally lost. In the difficult operations of surgery, those of hernia and lithotomy, by way of example, the circumstances in which they are to be performed are fully stated, the dangerous occurrences attending their execution, and the methods of averting or of contending against them, if they do happen, are carefully described, and having acquired a knowledge of every possible contingency, the operator is well prepared to meet every difficulty. Nothing beyond this, is required in instrumental parturition. Let it be understood, that although very rarely, yet that sometimes artificial aid is necessary—that it behoves the accoucheur accurately to discover the nature of the difficulty opposing delivery, and how far it is likely to be overcome by the natural efforts; that if he deliberately determines these to be insufficient, he is next to ascertain the precise

situation of the child's head, in reference to the pelvis ; and if the os uteri be fully dilated, he may proceed by the forceps, as by a pair of artificial hands, to obtain a firm hold of the cranium. That in their introduction, he is to be guided by certain directions clearly and simply taught, and in the subsequent extraction, he is to act on principles, arising out of the relations of the bony canal of the pelvis to the head of the child. That in the performance of these duties, he may encounter greater or less difficulty, and in some instances the obstacles may prove insuperable ; yet if gentleness and caution be observed, and a strict regard paid to the axis of that part of the pelvis in which the difficulty exists, he may advance from the moderate to the higher degrees of extracting power, without any injury, either to the mother or her offspring.

The *long* forceps is peculiarly applicable to those deformities of the *brim* of the pelvis, which are produced by contraction of its antro-posterior diameter. In these cases, the deficiency of space, although oftentimes inconsiderable, may yet oppose insurmount-

able obstacles to natural labour, and but for the timely assistance which may be afforded by this instrument, the life of the child will almost certainly be sacrificed. In my opinion, the long forceps has here a decided advantage over the lever, for when once introduced, it can scarcely fail, even by gentle efforts, to accomplish the delivery; but it is not so with the latter instrument, at least, in the hands of a young and inexperienced practitioner: the lever, unlike the forceps, possesses no fixed fulcrum, and if the first degrees of force are not sufficient to overcome the obstacles, an additional degree of power, injudiciously imparted, may, by converting the bony pelvis into a fixed point of action, seriously injure the soft parts of the mother. Again, in those cases of *hæmorrhage*, *syncope*, or *convulsions*, arising when the head has not descended sufficiently low into the pelvis, to be within the reach of the common instrument, the advantages obtained, both for the mother and child by the use of the long forceps are very decided. We have already defined the circumstances which justify and demand delivery by the forceps;

and before giving particular directions for its introduction, we may observe, that the long forceps generally measures about *fourteen* inches, and when properly applied at the brim, its point will be directed in a line towards the umbilicus, and its shank will lie upon the perineum. Some practitioners prefer this instrument with a *curvature*, by which the handles are thrown forward, and the perineum rendered perhaps more secure. We do not think this a matter of importance, as, after all, the protection of the perineum will mainly depend on the address and gentleness of the accoucheur. The lock of the instrument is a point of some moment, it should be loose, so as to admit a conjunction of the blades without very complete apposition with each other, as in applying them high in the pelvis, this apposition cannot always be obtained. Having warmed the forceps by immersing them in hot water, and lubricated them by some unctuous substance, take one blade in the right hand, and if the instrument be straight, which we prefer, either may be selected,; if, on the contrary, they are *incurvated*, choose that blade which is to lie below in the left of the

pelvis, and which when introduced, will have its concavity towards the pubis, and its convexity towards the sacrum. This being arranged, slide up with great caution one or two fingers of the left hand as high as possible into the vagina laterally, as the pelvis is there generally the most capacious, and on the inside of these fingers, which serve to protect the vagina and cervix uteri, the first blade of the forceps is to be *gradually* and *gently* worked forwards, till meeting either with the face or occiput, it glides over them and obtains a bearing. This blade being thus applied, may be secured in its position, by the thumb and two last fingers of the left hand, the two remaining fingers of the same hand, being again passed up the vagina on the opposite side, for the same purposes as previously. The second blade is now to be firmly, though lightly poised by the right hand, and being forwarded, with the same gentleness as the first, along the back of the pelvis, half way to its destination, the direction of its further progress must be changed, and it may be carried laterally, till it can be applied over the child's head, its point towards the umbilicus, and

its shank lying on the perineum; thus securing its apposition with the first blade. The subsequent extraction is to be conducted in strict accordance with the principles already laid down; and in the majority of instances, by the employment of only a moderate degree of extracting power, more especially, if we have the co-operation of the natural uterine efforts, the head will *turn* as in natural labour, the face lying in the hollow of the sacrum, and the ears on each side of the pelvis. Now the *long* forceps may be removed and re-applied to the sides of the cranium, and the labour terminated as in a natural case; or, if having entered the cavity, there is no further difficulty, and the pains are vigorous, the future progress may be left entirely to nature.

Of the Vectis.

We have not space, in an elementary treatise like the present, to enter at large into the enquiry of which is the better instrument, the forceps or the lever; we know that men well qualified to form an opinion have embraced different views of this question, arising probably from their individual skill in their

employment. It must, we think, be allowed, that the lever is a very powerful agent, and if the soft parts of the woman be constituted its fulcrum, its use will be highly dangerous; notwithstanding it may be applied to any part of the head, and may be used earlier than the forceps, we think the latter by far the better instrument.

Of the short Forceps.

This instrument is only capable of aiding the delivery, when the head has descended very low into the pelvis, and when consequently the necessity for its use cannot frequently occur. Its employment may, however, be justified by *exhaustion, hæmorrhage, convulsions, want of room, and unfavourable position of the child's head*: the criterion of the propriety of its application, being a capability to feel one or both ears. We shall select *three* varieties of presentations of the vertex, all which admit of the application of the short forceps or lever.

FIRST. *Where the turn is completed, the face lying in the hollow of the sacrum.*

[Vide Plates 5, 6, 7.]

Here the application of instruments is easy and simple. The same preparatory measures being observed, as in the introduction of the long forceps, two of the fingers of the left hand are to be passed up between the vagina and the child's head, till the ear is distinctly felt, a point of easy accomplishment when the turn is made. The blade to be first applied, and either may be chosen if the instrument be straight, is now taken into the right hand, and *gently* insinuated, between the fingers and the ear, till the lock approaches the external parts of the mother; when, if we could see the progress made internally, we should find that the point of the instrument had reached the chin, and that the ear lay in its fenestra. The remaining blade will easily be passed in a corresponding direction to that already introduced, so that the head will be secured, and by drawing down according to the rules already prescribed, the labour may be gradually and sometimes even quickly terminated.

SECOND. *When the turn is completed, the forehead being opposed to the pubes, and the vertex in the hollow of the sacrum.*

[Vide Plates 8 and 9.]

This position of the head, although originating no difficulty in the application of the forceps, is attended with imminent risk to the child, principally owing to the relative mal-position of the parts and the unyielding disposition of the facial bones, which, unlike those of the cranium, will not overlap each other. The larger fontanel will of course be situated towards the pubes, and the sagittal suture will be extending backwards, towards the sacrum. If the head be small, and the pelvis well proportioned and of good size, the forehead may, in some instances, gradually descend under the influence of strong pains, and dilate the external parts, till at length the face will emerge from under the arch of the pubes, the perineum demanding especial care to prevent its laceration. If nature, however, is unable to accomplish the expulsion of the head, we may, according to Smellie's recommendation, *manually* attempt to remedy the mal-position by steady pressure, with the forefingers of both hands, against the opposite frontal and parietal bones, so as to turn the face into the hollow of the sacrum. If this be done *during the absence of pain*, and the head is not altogether firmly fixed

in the pelvis, its change of position may be accomplished. If, however, we fail in these efforts, the forceps must be employed to accomplish the same purpose, ever bearing in mind, that it is preferable to bring the head down without any change of position, rather than by the employment of high degrees of force, to endanger the contusion and laceration of the soft parts of the mother. The instrument, when properly applied in this case, will have the points of the blades at the chin, and the locking over the vertex of the child; and in our attempts at extraction, we must be careful to aid the fixing of the chin on the chest, and to bear the occiput from the sacrum and perineum. There is no case in which it is more necessary to afford time to the parturient efforts than in this, for the whole of the head must, and that incommodiously, enter the pelvis before any part of the cranium can pass out under the arch of the pubis. Some practitioners have been so impressed with the difficulties attendant on this position, as to recommend the early use of the *perforator*, if the plans already described, are not quickly, and without any immoderate effort, successful.

THIRD. *When the turn is made, the occiput lying to the one and the face to the opposite side of the pelvis.*

[Vide Plate 4.]

In this case there is no adaptation of parts, as the long diameter of the head is opposed to the shortest diameter of the outlet, and it is evident that the sacro-ischiatic ligaments and the spinous processes of the ischia must impede further progress. The use of the forceps cannot, however, be very frequently required; nevertheless a want of success in the completion of the *half turn* of the head into *the hollow of the sacrum*, by the fingers, exhaustion, syncope, convulsions, or a sudden eruption of blood from the uterus may fully justify their employment. The first blade must be applied in the front of the pelvis, between the head and pubes, and the other in the hollow of the sacrum; or if it be deemed preferable, the instrument may be applied over the face and occiput. In either case, cautious and gentle efforts at abstraction must direct the face into the hollow of the sacrum, and bring the occiput under the arch of the pubis.

Several circumstances of considerable moment in the employment of the forceps remain still to be noticed. We have already mentioned the principal symptoms indicating their use, and it must be evident, that a *want of uterine contraction*, if it be total and complete, is one of the most urgent. It should, however, be borne in mind, that some patients are predisposed to a suspension of parturient action, not from *exhaustion*, but from idiosyncrasy of constitution, or from accidental circumstances; here the forceps is not required, as in the absence of expulsive pain, there can be no necessity artificially to hasten the birth of the child. The soft parts are suffering no dangerous contusion, the patient is not approaching to a state of debility, and if she be encouraged and tranquillized, the unaided action of the uterus will naturally and safely terminate the delivery. We may be called upon to afford instrumental help, when, from a too protracted labour, the patient is almost in a state of *collapse*: here if it be unsafe to wait for her partial reanimation, we must give a very guarded prognosis; and before commencing delivery, wait some little time for the effect of a judiciously exhibited

stimulant, such as brandy, rum, &c. *Tonicity or rigidity of parts and general febrile excitement* may supply valid reasons for deferring instrumental aid. If, however, immediate interference be necessary, the *perforator* must be used: if, on the contrary, there is no urgency of symptoms, abstract blood, cool and tranquillize the patient, empty the bladder and rectum; when, after a few hours, the head being moulded by the uterine efforts, will descend lower into the pelvis, and delivery may be safely attempted. Again, the mere prolongation of the labour does not invariably demand the interposition of the forceps. *Severe pressure* on the parts does not commence till after the full dilatation of the os uteri and the escape of the waters, we may, therefore, from this period, calculate the time when we are to administer instrumental aid, and if four and twenty hours have elapsed, and the pains have been forcing and strong, with comparatively little or no advance of the head, we may seriously think of bestowing artificial help, for it is not now probable, that parturition will be terminated by the natural efforts, and dangerous symptoms may suddenly arise.

After the termination of an instrumental delivery, *certain symptoms* sometimes arise, solely referrible to its laborious and protracted character, and which demand vigilant watchfulness. No greater diversity is evident in the whole series of puerperal affections than in the results of difficult and instrumental parturition; for while some women recover almost without an unpleasant feeling, others only regain their accustomed health after a painfully prolonged period of danger and debility. The few remarks we shall offer, belong, perhaps, more properly to the concluding part of the book; but as they are intimately connected with the use of instruments, we may perhaps be excused for annexing them to this section.

A contused, swelled and painful condition of the vagina, labia and neighbouring parts, is by no means an unfrequent result of laborious parturition, even where it is ably managed. If it be attended only by slight inflammation and discharge, it will require little medical interference: if, however, sloughing should occur, in addition to warm anodyne fomentations and poultices, always proper in these cases, the ol. terebinth, in the proportion of one

to two parts of olive oil, may be applied on lint to the gangrenous spots. The general health will of course require to be sustained by nutritious diet and tonic remedies.

I have only witnessed one case in which *fatal collapse* occurred, and in this instance it was attributable to *protraction* before the use of any instruments, and when used, to the employment of the *forceps* instead of the *perforator*. Here the system never rallied from the shock produced by the long continuance and severity of the labour, the pulse was small and scarcely to be numbered, the countenance fallen and cadaverous, and the stimulants administered were unproductive of good, vomiting invariably occurring after each successive quantity. The patient died in eighteen hours after delivery. There are, however, *milder forms of collapse*, in which the judicious exhibition of diffusive stimuli, and brandy and rum are amongst the best, is highly advantageous. Such patients require the utmost attention; no symptom must be allowed to become unduly prominent, and while we are careful to obviate the effects of depression, we must be as careful to prevent the first approaches of inflammatory action

in any organ or part, to which they are peculiarly liable. We may, perhaps, be allowed to observe, that no cases more richly reward unwearied care, than the affections of the puerperal state: the system seems prepared for a certain amount of shock, and a moderate degree of sympathy in the altered condition produced by parturition, facilitates rather than retards recovery. We have often been surprised and pleased at the gradual disappearance of alarming disease, under moderate and vigilant treatment; and we are persuaded that many practitioners could bear their testimony to the satisfactory exercise of the remedial principle in these cases.

PLATE IV.

Shows the manner in which the head is brought forward by the forceps, as by artificial hands, where the ears of the child are opposed to the symphysis pubis and sacrum, the occiput lying to the one and the face to the opposite side of the pelvis. It will be observed here, that the head has been forced down by the labour pains from its former position in Plate I.

A. A. B. C. The *lumbar, vertebræ, os sacrum* and *coccyx*.

D. The *os pubis* of the left side.

E. The remaining part of the bladder.

F. The *intestinum rectum*.

G. G. G. The *uterus*.

H. The *mons veneris*.

I. The *clitoris* with the left *nympha*.

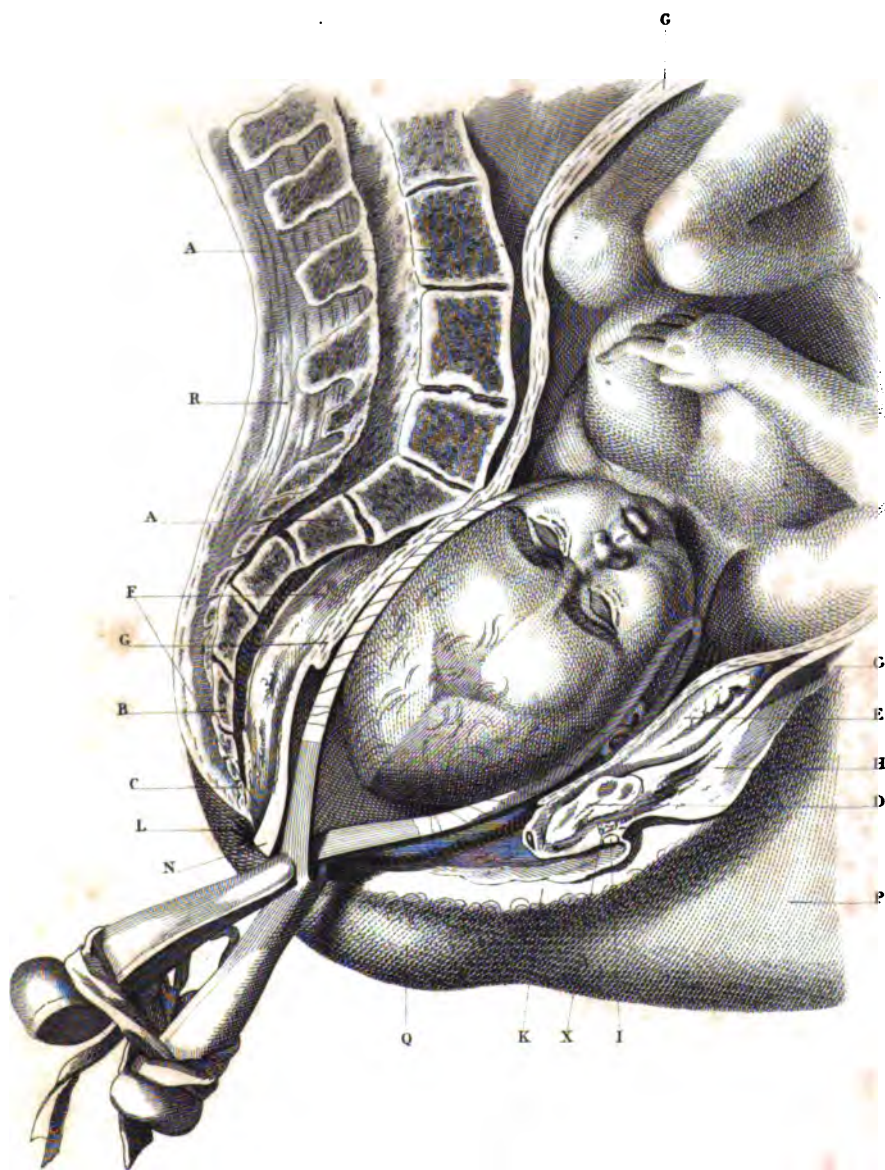
X. The *corpus cavernosum clitoridis*.

L. The *anus*.

N. The *perineum*.

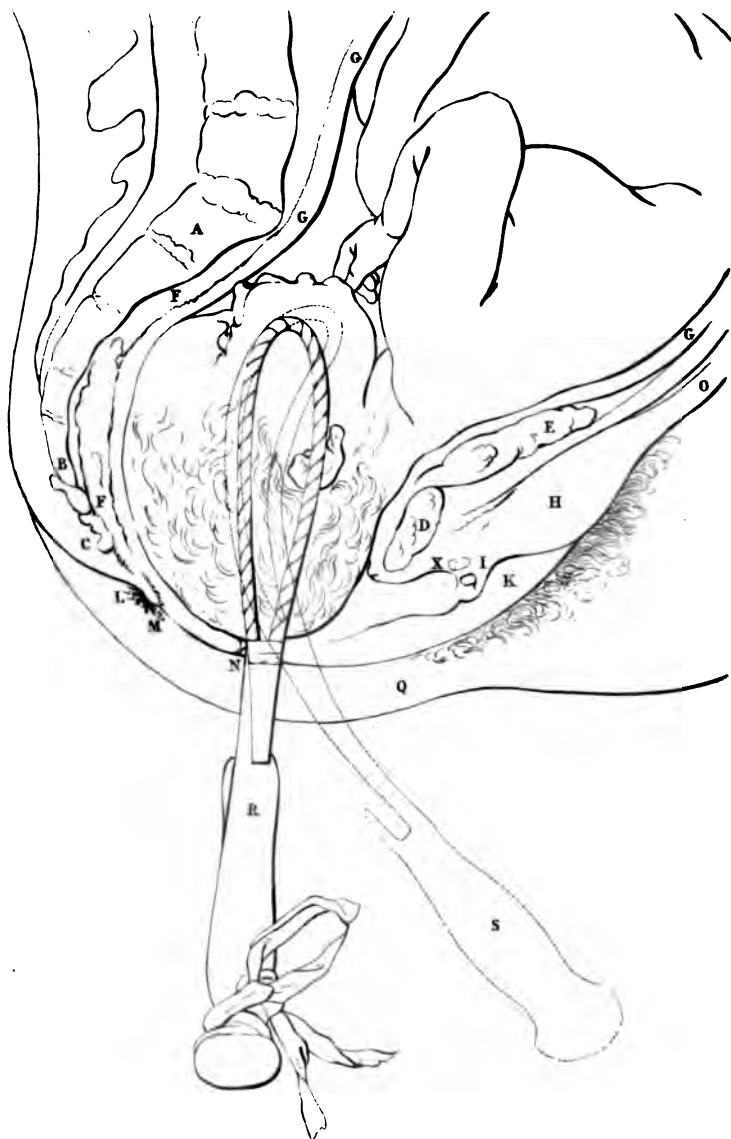
Q. P. The left hip and thigh.

R. The skin and muscular part of the loins.



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London: Published 1818, by Chas. Taylor, 15, Finsbury



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PLATE V.

Represents in outlines the head brought lower by the forceps, and turned from the position in Plate IV. in imitation of the natural progress by the labour pains, which may likewise be supposed to have effected this turn, before it was necessary to assist instrumentally, this necessity arising from some of the causes already mentioned.

Here the position of the forceps, along the ears and narrow part of the head is more particularly expressed. It appears also, that when the vertex is turned from the left os ischium, where it was closely confined, it is disengaged by coming out below the pubes, and the forehead, which was pressed against the middle of the right os ischium, is turned into the hollow of the sacrum. By this means the narrow part of the head is now between the ossa ischium or narrow part of the pelvis, and as the occiput comes out below the pubes, the head passes still easier along. Most of the parts of this plate being marked with the

c c 2

same letters as the former, the descriptions there given will serve, except the following :

L. M. The *anus*.

M. N. The *perineum*.

O. The common integuments of the abdomen.

R. The *short* forceps.

S. Smellie's long curved forceps.

same letters as the
there given will serve

L. M. The *anus*

M. N. The *perineum*

O. The *commissure*
dome

R. The *shaft*

S. Smellie



PLATE VI.

Shows the head brought still lower down by the forceps than in Plate V. Here the external parts are more dilated, the occiput has advanced from below the pubes and the forehead has passed the coccyx, by which both the anus and perineum are put on the stretch. At this period, and even previously, there may be no further need for the forceps, the natural efforts being quite sufficient to terminate the delivery. Under such circumstances, the instrument may be removed and the perineum carefully guarded.

S. T. Represent the left side of the os uteri. The dotted lines demonstrate the situation of the bones of the pelvis on the right side, and may serve as an example for all the lateral views of the same.

a. b. c. h. The outlines of the *os ilium*.

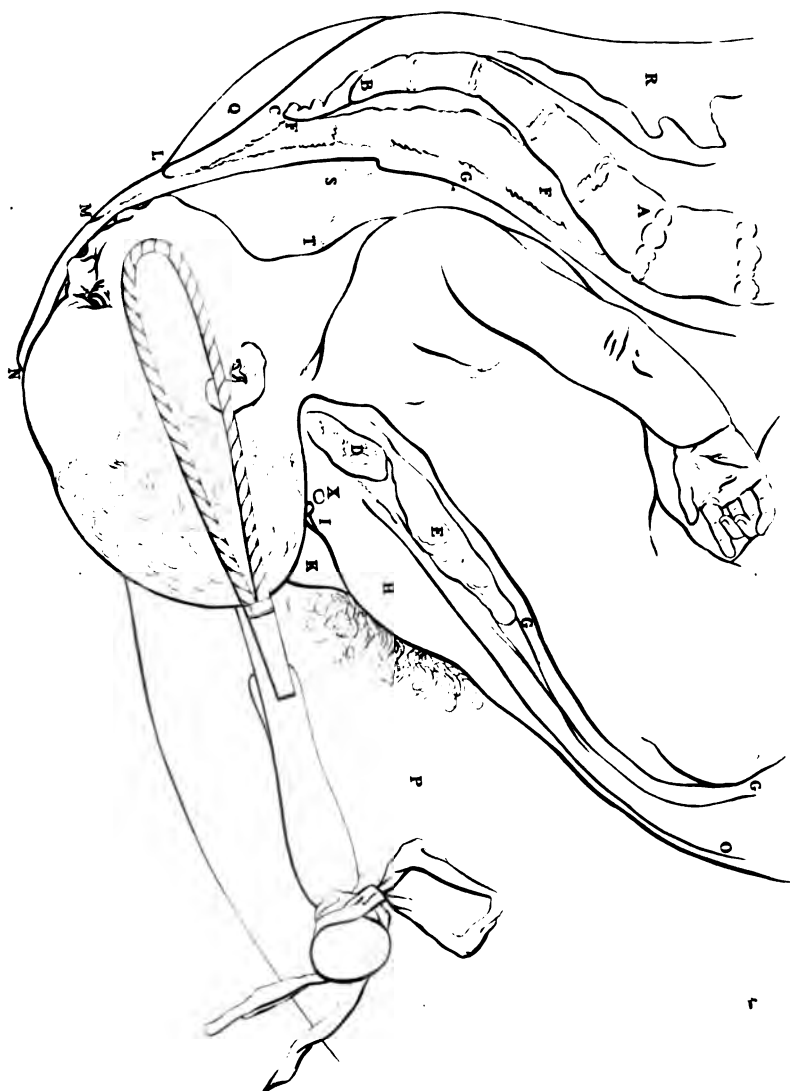
D. e. f. The outlines of the *pubis* and *ischium*.

m. n. The *foramen magnum*.

PLATE VII.

Is intended to show, that as the external parts are stretched, and the *os externum* dilated, the *occiput* rises up externally with a semicircular turn below the *pubes*, the under part of which bone is an axis or fulcrum, on which the back part of the neck turns, while at the same time the forehead and face also emerging, largely distend the parts between the coccyx and *os externum*. This is the method observed by nature in the dilatation of these parts, and the same procedure must be imitated, when it is necessary to employ the forceps.

See the three preceding Plates of Descriptions and References.



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PLATE VIII.

Shows the head after the completion of the turn, in the contrary position to the three last figures, the forehead being opposed to the pubes and the vertex in the hollow of the sacrum.

- A. B. The *vertebræ* of the loins, *os sacrum*, and *coccyx*.
- C. The *os pubis* of the left side.
- D. The *anus*.
- E. The *os externum* not yet begun to dilate.
- F. The *nympha*.
- G. The *labium pudendi* of the left side.
- H. The hip and thigh.
- I. I. The *uterus* contracted, the liquor amnii being all discharged.

When the head is small and the pelvis large, the parietal bones and the forehead, forced downwards by the labour pains, will gradually dilate the *os externum*, and stretch the intermediate parts as far as the *coccyx*, till the face comes down below the pubes, when the head will be safely delivered. But if the cranium be large and the pelvis contracted, the difficulties will be greater, and the forceps will be required as in the following plate.

PLATE IX.

Represents the head in the same position as in the former plate ; but being much larger, it is by strong pain elongated, with a tumour on the vertex from long compression in the pelvis.

K. The tumour on the *vertex*. The same compression and elongation of the head, as well as the tumor on the vertex, may be supposed to happen, in a greater or less degree, if the head be large or the pelvis small, in the positions represented in plates 4, 5, 6, and 7.

L. *The forceps*. Sometimes the forehead may be moved to the natural position by the assistance of the fingers or by one blade only of the forceps.

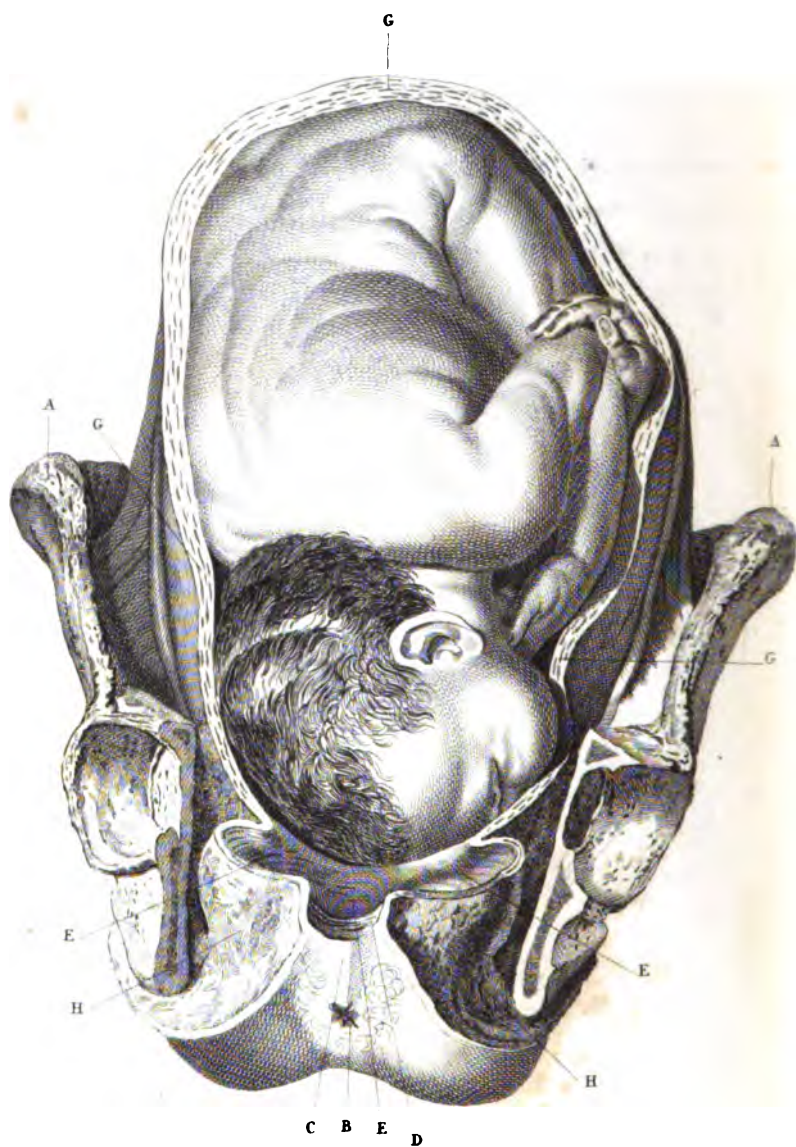
M. The *vesica urinaria* much distended by urine, from the long pressure of the head against the urethra, demonstrating the necessity there is to introduce the catheter, in forceps cases, and where the operation of turning is required.

N. The smaller part of the *uterus*.

O. O. The *os uteri*.



Invented by J. Stewart, Senr.



Engraved by J. Sowerby Junr

PLATE X.

Shows, in a front view of the parts, the *fore-head* presenting at the brim of the pelvis, the *face* lying to one side and the *fontanelle* to the other.

- A. A. The superior part of the *ossa ilium*.
- B. The *anus*.
- C. The *perineum*.
- D. The *os externum*.
- E. E. E. The *vagina*.
- F. The *os uteri* not yet fully dilated.
- G. G. G. The *uterus*.
- H. The *membrana adiposa*.

If the face is not forced down, the head will sometimes come along in this manner, in which case the *vertex* will be flattened, and the *forehead* raised in a conical form, and when the cranium has descended into the lower part of the pelvic cavity, the *face or occiput* will be turned from the side, and emerge from below the pubes. If the head be too large to be expelled by the pains, or if the wrong position cannot be altered, the child must, if possible, be turned, and brought footling, or delivered by the forceps.

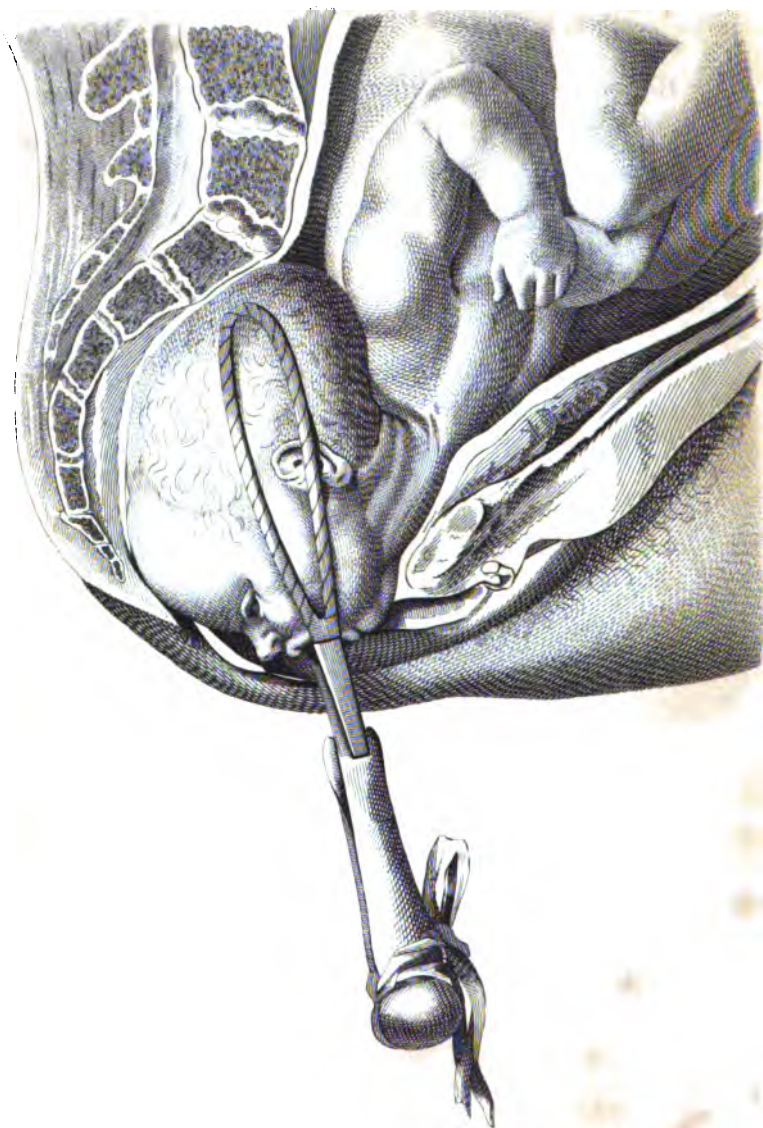
PLATE XI.

Shows, in a lateral view, the face of the child presenting, and forced down into the lower part of the pelvis, the *chin below the pubes*, and the vertex in the hollow of the sacrum: the liquor amnii being all discharged, the *uterus* closely embraces the body of the child, round the neck of which is one circumvolution of the funis.

- A. B. The *vertebræ* of the loins, *os sacrum* and *coccyx*.
- C. The *os pubis* of the left side.
- D. The inferior part of the *rectum*.
- E. The *perineum*.
- F. The left *labium pudendi*.
- G. G. G. The *uterus*.



Engraved by J. Stewart sculp.



Engraved by J. Stewart del.

PLATE XII.

Represents, in a lateral view, the *head* in the same position as in the former plate, but the delivery is supposed to be retarded either by its large dimensions or by contraction of the pelvis.

SECT. III.—*Of the Perforator.*

We shall now detail a few particulars relative to those difficult cases of parturition, in which, from the size of the head, or from distortion in the pelvis, the cranium can neither be protruded by the force of the natural pains, nor extracted by the forceps ; and which consequently require the life of the child to be sacrificed to the safety of the mother. This operation was, by the ancients, called embryotomy. “ The reluctance,” says Dr. Merri- man, “ which every well regulated mind must feel at employing the perforator, even in cases of the greatest necessity, while the infant is yet living, naturally occasions a wish to delay the operation, till there are some indications of the child’s death ; and these indications are sought for in certain symptoms which most writers on midwifery have been careful to enumerate. These symptoms are, a want of foetal motion and pulsation at the fontanelles ; a rolling, as of a lump or dead weight, to that side on which its mother is lying :

shivering fits on the part of its mother, flaccidity of the breasts; foetor of the uterine discharges; and an emphysematous and very loose feel of the bones of the cranium."

When the head, from its extraordinary bulk, is detained at the brim of the pelvis, on evacuating its contents, the bones of the cranium immediately collapse, and it is afterwards propelled by the force of the labour pains. If these are insufficient, the extraction must be made with craniotomy forceps.* The unfavourable position of the head is, of itself, a cause insufficient to justify the use of destructive instruments, which ought never to be employed but in extreme cases, after every milder method has failed. From the difficult access to the cranium, in order to make a perforation and evacuate the brain, a face case makes a very troublesome and dangerous crotchet one; very fortunately in narrow pelves the face rarely presents, and very seldom advances far in that direction; at other times the position may be so altered, that the vertex, the back of the ear, or some

* My friend, Mr. Holmes, has invented a pair of craniotomy forceps, preferable to any I have yet seen.

other part of the cranium can be reached : otherwise, the crotchet must be fixed in the mouth or orbit of the eye, and the head brought along in that direction, till the perforator can be employed to open the skull. But the grand cause of difficult labour, is *the narrowness or distortion of the pelvis*. For when at the brim, instead of four inches and a quarter from the pubes to sacrum, it measures no more than one and a half, one and a quarter, two, or two and a quarter, the use of instruments becomes absolutely requisite ; and very frequently in those of two and a half and three inches ; or when the diameters through the cavity, or at the inferior aperture of the pelvis, are retrenched in the same proportion, difficulties will arise, and the delivery, except the labour be premature or the child of a small size, cannot be accomplished without the assistance of destructive instruments. We judge of the form and size of the pelvis by the external make and form of the woman, by the progress of labour, and by the touch. When the fault is at the inferior aperture, the touch is pretty decisive ; if a protuberance is felt in the os sacrum, instead of a concavity ; if the coccyx is angulated ; if the symphysis

pubis projects inwards, in form of an acute angle; if the tuberosities of the ischia approach too near each other, or the one tuber be higher than the other; such appearances are infallible marks of a distorted pelvis. But, when the narrowness is confined to the brim, this is only to be discovered by the introduction of the hand. The projection of the lumbar vertebræ over the sacrum, is a species of narrow pelvis that most frequently occurs in practice. In this case the child's head, by the pressure it sustains between the pubes and sacrum, is moulded into a conical or sugar-loaf form, the parietal bones are squeezed together, overlapping one another, and will be felt to the touch, when the labour is advanced, as a ridge. Instead of the complicated instrumental apparatus, invented by the ancients, such as screws, hooks, &c. for fixing in, laying hold of, and extracting the head as it presented, an operation in many cases difficult and dangerous, when the head was bulky or the pelvis narrow, as the woman frequently lost her life in the attempt; the practice of diminishing the size of the head, by opening the cranium and evacuating the

brain previous to the extraction, is a modern improvement, and an important one; the instruments for this purpose consisting of the perforator, a blunt hook, and the craniotomy forceps. When the accoucheur is under the necessity of destroying the child to preserve the mother, she must be laid in the position already advised for the application of the forceps, and the same rules recommended for the one operation will in general apply to the other. Thus, in the narrowest pelvis that occurs, previous to opening the cranium, the soft parts should be completely dilated, and the head of the child fixed steadily in the pelvis and advanced as far as possible; for, while the head is high and loose above the brim, the application of instruments is very difficult as well as hazardous. The perforator must be cautiously introduced into the vagina, directed by the hand of the accoucheur; its points must be carefully guarded till they press against the cranium of the child, which they must be made to perforate till they are pushed on as far as the rests; they must then be opened fully, carefully reshut, half turned, and again widely opened, so as to make a sufficient aperture in the cranium.

They must afterwards be pushed beyond the rests, opened diagonally again and again in such a manner as to tear and break to pieces the bones of the cranium; they must then be shut with great care, and withdrawn along the hand in the same cautious manner as they were introduced, lest they should bruise or tear the uterus, vagina, or any other parts. The teguments of the scalp should now be brought over the ragged bones of the cranium, and the patient should be allowed to rest, after which the bones of the cranium will collapse, and if she has much strength remaining, or the pelvis be not much distorted, the head, being thus diminished, will be protruded by the force of natural pains, otherwise it must be extracted by the craniotomy forceps introduced in the same manner, and guarding the point on the opposite side while making the extraction.

CLASS II.

ORDER III. *Impracticable Labour, or that in which the child, even when as much as possible reduced in size, cannot pass through the pelvis, and where the Cæsarian operation becomes necessary.*

SECT. IV. *The Cæsarian Operation.*

This operation consists in making an incision through the abdominal and uterine parietes, sufficiently large to allow the introduction of the hand, and the extraction of the fœtus and its appendages. We know of only one instance in this country, where the preservation of the mother's life has attended its performance, while on the Continent, according to M. Baudeloque, it has been abundantly successful. In England this measure is never contemplated till every other remedy has been tried; and one reason of its little success may perhaps be found in the exhaustion which these previous means may have induced. Of twenty-two cases operated on in

these islands, twenty-one of the mothers died; of the children ten were born dead; and of the twelve extracted alive, four survived only a few days. The whole number of lives preserved, therefore, does not exceed nine. The most astonishing case is that of Alice O'Neil, an Irishwoman, operated on by Mary Donally, a bold but ignorant midwife; she made an incision through the abdomen and uterus with a razor, and held the lips of the womb together with the hand, till some one went a mile, and returned with silk and the common needles which tailors use. With these she joined the lips in the manner of the stitch employed ordinarily for the hare lip, and dressed the wound with white of eggs. The woman recovered in twenty-seven days, and the cure is authenticated by Mr. Duncan Stewart, surgeon in Dungannon, and Dr. Gabriel King, of Armagh. The cases are very rare indeed which demand this operation; as when the perforator has been fully employed, children have been delivered, although the distance between the ossa pubis and os sacrum did not exceed one inch and a half, and not more than two inches from one side to the other. There can be no

doubt of the propriety of the Cæsarian section, where women near the full time of pregnancy die undelivered, since by this measure the child may be preserved. The danger and the sacrifice of life which invariably attended the use of the perforator, and which frequently followed the Cæsarian operation, induced many enquiries for a plan of treatment, which, while it might hold out a fair expectation of safety to the child, should not compromise the welfare of the mother. The *section of the symphysis pubis*, *abstinence on the part of the mother*, and *the bringing on of premature labour*, have been tried for this purpose. Of the first, we need only say, that it has sunk into complete desuetude, the success attending it not being at all commensurate with the danger incurred. Of the second, proposed by Mr. James Lucas, surgeon to the medical infirmary at Leeds, in the Memoirs of the Medical Society of London, Signor Assalini relates a case in which it was usefully enjoined; but remarks that no great reliance is to be placed upon it, for women who constantly reject, by vomiting, every particle of food they swallow, have, notwithstanding on many occasions,

large children. Of the third, we believe, most practitioners think highly; and, although it cannot be denied that the mother incurs some degree of danger, it may be affirmed that she is placed in as much, if not more, by the use of the perforator. Smellie mentions the case of a woman whose pelvis measured less than two inches and a half of conjugate diameter; she had been five times delivered, and only one child was saved, by being born in the eighth month of a very small size. He has likewise given two plates, showing a pelvis of two inches and a quarter conjugate diameter. One of these demonstrates the impossibility of a full grown foetus, though the bones of the head are very much compressed, passing immutated; the other exhibits a seven months foetus clearing the strait. Dr. Merriman says, that he has been made accurately acquainted with the particulars of thirty-three cases of labour prematurely induced, in the eighth month of pregnancy, on account of extreme distortion of the pelvis. In twenty-one of these, the children were born dead; in four, one of which was a case of twins, they were born alive, but incapable of living

more than a few hours ; nine were born alive, and capable of being reared. Thus nearly one-third of the children were saved, who must have lost their lives had the women gone to the full time, and been delivered by the perforator ; and all the women recovered, the majority of whom, if not the whole number, must have been lost, had the Cæsarian operation been performed. There are two ways in which premature parturition may be induced, either by the careful puncturing of the membranes within the os uteri, by the stilette of a catheter or by the introducing the finger within the os uteri, to detach the decidua, thus exciting parturient action, by which the membranes may be forced upon, and will dilate the os and cervix uteri, as in natural labour. The management of the subsequent delivery, which generally occurs in from twenty-four to seventy-two hours, will of course depend on its ordinary or preternatural character.

CLASS III.

FLOODING LABOUR,

INCLUDING THE EARLIER AND LATER HÆMORRHAGES, ATTENDANT
ON GESTATION AS WELL AS PARTURITION.

CHAP. I.

SECT. I. *General Observations on Uterine
Hæmorrhage.*

There is, perhaps, no part of obstetric practice more important than the treatment of hæmorrhage from the uterus. It may occur in every stage of pregnancy, and in every intermediate degree, from a quantity so small as scarcely to attract notice, to a flooding so large, as to induce asphyxia and death. It will readily be conceived, that the effect on the general and more especially on the uterine system, will bear some correct proportion to the amount of the discharge. That this is partially the case, cannot be denied, and yet the dangerous impression produced on some constitutions, by a smaller, and the diminished injury sustained by others

from a larger loss of blood, originates a great part of the difficulty attendant on the treatment of flooding. When the nature of the connexion existing between the mother and the fœtus is understood, it will readily be allowed, that the amount of hæmorrhage, and consequently of danger, will *almost invariably and in all periods of pregnancy*, be commensurate with the *extent of detachment* of the placenta from the uterine surface. The reason for this is obvious, the vascular connexion between the placenta and the mother is the medium of sanguineous communication between the foetal and maternal systems; and although in the commencement of gestation, the communicating vessels are small, yet the quantity of blood carried by them, must always exceed that furnished to the membraneous parts of the involucra, to the rupture of which, more especially at the lower parts of the body and cervix uteri, *the more sparing hæmorrhages* may be often attributed. We have already observed, that in the latter months, the enlargement of the uterine vessels is astonishingly great, while in the earlier periods, little blood being required, a small quantity only is furnished to

the uterus. There is great wisdom in this procedure; for, at this time, the connexion of the ovum with the maternal system is not so well established as afterwards, the adhesion of the decidua to the internal surface of the uterus is not very firm, and the ovum itself, presenting only a small surface, is, of course, much more easily affected by contractile action of the uterus, terminating in abortion. It may be assumed as a generally established fact, that *the floodings of the earlier months are seldom dangerous*. This, however, does not always happen, as alarming symptoms sometimes occur, even in these periods, when the placenta is extensively separated. *The frequent recurrence* and the *short continuance* of the flow of blood are circumstances characterizing uterine hæmorrhage. In the former case, danger may arise even from small losses, if frequently repeated; whereas a pint or more coming away at once, succeeded by entire cessation of the discharge, may induce neither danger nor miscarriage. We shall, after these prefatory remarks, consider this important subject under four divisions.

First. Hæmorrhage occurring *previously to the completion of the sixth month*, which may or may not be accompanied by abortion, and which rarely requires manual aid.

Second. Hæmorrhage occurring after this period, but *before the birth of the child*, including partial and entire presentations of the placenta.

Third. Hæmorrhage occurring *subsequently to the birth of the child* and before the expulsion of the placenta.

Fourth. Hæmorrhage occurring *after the expulsion of the placenta*.

SECT. II. *Hæmorrhage occurring previously to the completion of the sixth month, which may or may not be accompanied by abortion, and which rarely requires manual aid.*

These are the cases where we shall be most frequently consulted, and our treatment to be successful must depend on principle, admit-

ting of variation according to the urgency of symptoms. We may remark here, that the *age of the pregnancy*, the *extent of placental detachment* and the *sudden or more gradual escape of the blood*, are circumstances determining the dangerous or trivial character of uterine hæmorrhage; and it should also be impressed upon the mind, *that coagulation, or the formation of a clot over the mouth of the bleeding vessels*, the *rupture of the membranes*, and the *consequent escape of the liquor amnii*, the effect of *certain medicines*, and the *emptying of the uterus*, comprise the whole of the treatment. Suppose that a woman in the third or fourth month, without any premonitory symptoms, is suddenly seized with a discharge of blood from the uterus; it may occur very suddenly, a pint or two may be lost in one or two gushes, and without any assistance, perhaps, before the arrival of the accoucheur, it ceases. In such a case, we should strongly recommend the recumbent posture; and if there was plethora or a full and strong pulse, or if, in consequence of the disturbance of the circulation, there was congestion in any organ or part, we should not hesitate to abstract twelve or fourteen ounces

of blood; premising that we are not favourable to large or repeated bleedings during gestation. In addition, we should urge the great importance of mental and bodily quietude; we should unload the bowels by gentle saline aperients, and we should be especially desirous to empty the rectum by mild and un-irritating enemas. If there was no return of the bleeding, our treatment would probably terminate here, and, in *a few weeks*, the patient, resuming her usual avocations, might probably go forward to the completion of pregnancy. But, to suppose another case, if we were called to a patient who had lost several pints of blood, in the first instance, and where the hæmorrhage was still going forward, sometimes in rather large quantity, but constantly to a greater or less extent; we should not rest satisfied with treatment so simple as that now described. Here we might possibly find the patient in a state of *collapse*, and our first efforts would naturally be directed to the arousing her from such a condition. This step alone requires reflection, if we can satisfy ourselves that the hæmorrhage is not so large as to occasion fatal asphyxia, we prevent, by rapidly re-

storing the circulation to its previous and perhaps morbid state of excitement, that concretion of blood on which, under moderate flooding, our hopes of the formation of a clot or plug greatly depends. If then it can be safely done, the patient may be allowed slowly to recover; and if no fresh eruption occur, our attention is next directed to the best means of preventing the further daily and gradual loss. *Absolute rest* in the recumbent posture is one most important measure. *Digitalis* carefully watched, may be administered in operative doses, and I think many cases have occurred to myself, in which it has been highly useful. To the *superacetate of lead*, however, in uterine as well as other hæmorrhage, where it is not sudden and excessive, the preference must be given. *Four*, or at the most *five* grains may be exhibited in the course of the twenty-four hours, each grain and a half being combined with one quarter of a grain of opium. It is scarcely necessary to add, that painful affections of the bowels, inducing expulsion of the uterine contents and slight paralysis, may be induced by the too protracted administration of the lead. The *ol. terebinth.* is highly es-

teemed by many practitioners in cases of draining hæmorrhage; and where it can be borne on the stomach, one or two drachms floating on plain or spear mint water, may be swallowed three times daily. Notwithstanding the employment of these remedies, aided by the antiphlogistic regimen and a proper diet, the flooding may still continue, and by repeated small losses, gradually undermine the patient's health. Under these circumstances, we shall be compelled *to empty the uterus*; and as we intend in the next section, to dwell rather fully on the rupture of the membranes as a means of restraining hæmorrhage, we shall now only observe, that the *ergot of rye* will generally excite the expulsive efforts of the uterus more certainly and effectually than any other remedy. There is yet a third case of flooding in the earlier months, where a much larger quantity of blood is lost, and where *manual or digital* aid is demanded, in conjunction with the most decisive and powerful remedies: *dashing cold water on the abdomen, brandy in large quantities, and even transfusion may be here required.* I shall subjoin two cases.

Denman says, that all expulsions of the foetus before the termination of the sixth month of pregnancy, may be called abortions ; but that all expulsions in the last three months, are to be considered as labours, premature or irregular. The practical reason for this distinction, he conceives to be of great importance ; before the termination of the sixth month, these cases, generally speaking, neither require nor allow of manual assistance ; but in the last three months, they admit of manual interference, if it be required, though not with equal ease ; for the longer the time which is wanting to complete the period of utero-gestation, the greater will be the difficulties attending any operation it may be thought necessary to perform. In this rule we do not fully concur, as there are abortions during the first four months, where hæmorrhage occurs to so great an extent, as would not only endanger but destroy life, were not the ovum removed *by artificial help*, generally perhaps, by the aid of the *fingers*. I was lately called to a poor woman in the third month of pregnancy (and the preparation of the ovum is now in the museum of St. Thomas's Hospital), who nearly died from

hæmorrhage occurring at this period. On entering the room, I was struck with the ghastly and dying appearance of the patient, whose early pregnancy had deterred her medical attendant from making any attempt to bring away the ovum. The flooding was very excessive and the collapse alarming; *of course*, nothing was attempted as to the removal of the embryo, in this powerless state of system; but having poured some nearly pure brandy down the throat, after an interval of about ten minutes, vitality was partially restored, and with its restoration there was also a renewal of the bleeding. I now introduced two or three fingers of the left hand into the vagina, insinuating them a little distance within the os uteri; here I found the ovum partly adherent and partly detached; with some slight difficulty I entirely separated it from the internal surface of the uterus, and its extraction was easily effected. The flooding immediately ceased, although the recovery was painfully protracted. The exceptions to this rule of Denman's are not unfrequent. My friend, Mr. Randall, of Finsbury Circus, lately met with a case of four month's pregnancy, where the placenta was partially ad-

herent to the os uteri, in which the patient would have been lost had not the foetus been manually extracted. The following case occurred to my friend, Mr. Scriven, of Weymouth. Mrs. S——, aged 34, of delicate constitution and spare habit, in the fifth month of pregnancy, was seized with alarming uterine hæmorrhage on the morning of the 12th of June, 1828. On Mr. Scriven's arrival he found her in a state of entire collapse, and after the administration of brandy in large quantities and the employment of other means, in half an hour she rallied. With the restoration of vitality, there was, as is usual in these cases, a renewal of the discharge, and feeling that there was no safety for her, except in the evacuation of the uterine contents, he gave her half a drachm of the ergot in powder. A quarter of an hour proved its efficacy, the foetus, with its membranes, was expelled, the uterus contracted, and the bleeding entirely ceased.

Abortion is a subject entitled to the fullest consideration of medical men, as it is a complaint of common occurrence during pregnancy, and frequently productive of serious injury to the female constitution. It is not in-

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variably happening in weakly and debilitated women, as might naturally be expected; for consumptive patients seldom abort, and it is scarcely possible to point out a more feeble and irritable state. "We may remark that weakness, or irritability in general, is seldom a cause of abortion, but some weakness or imperfection originating in or affecting the uterus and its appendages; or a peculiar kind of irritability thence proceeding, distinguishable enough in the female character, by a careful observer, which creates impatience of mind and restlessness of body, in which every occurrence is the source of ungrounded fear and solicitude, and every occurrence is performed with hurry and vexation." Abortions are not very often dangerous in the first five months; but a frequent habit of miscarriage debilitates the system, shatters the constitution, and lays the foundation of chronic diseases of the most obstinate and dangerous nature. In the advanced months the prognosis will be more or less favourable, according to the patient's former state of health; and the occasional cause and symptoms with which it is attended.

As to the treatment, it must be varied according to the particular circumstances of the case; nor is it possible to point out particular indications, or propose any regular plan to be pursued for this purpose. Abortion is often preceded by no apparent symptoms, till the rupture of the membranes and evacuation of the liquor amnii announce the approaching expulsion of the foetus. Either to remove threatening symptoms, or to prevent miscarriage when there is reason to apprehend it, often baffles our utmost skill; because it generally happens that there is a cessation of growth in the ovum; or in other words, an extinction of life in the foetus, some time previously to any appearance of abortion. For instance, in early gestation a patient often miscarries about the eleventh or twelfth week, but the age of the foetus at this time is generally no more than eight weeks. At other times, when by accident the foetus perishes, perhaps about the fifth or sixth month, it will be retained in utero, and the expulsion will not happen till near the completion of the full time. As women who have once miscarried, are liable to a recurrence from a like cause, at the same particular period; such an accident in

future pregnancies should be guarded against with the utmost caution. On the first appearance of threatening symptoms, the patient should be confined to a horizontal posture; her diet should be light and cooling; her mind should be kept as tranquil as possible; a little blood from the arm may be taken occasionally, and opiates administered according to circumstances; but excepting so far as depends on these, and similar precautions, in the way of medicines very little can be done. The medical treatment of abortion must, therefore, be considered with a view only to the prophylactic cure, and this will consist chiefly in a proper regimen.

SECT. III.—*Hæmorrhage, occurring after the sixth month, and before the birth of the child, including partial and entire presentations of the placenta.*

There is, perhaps, no circumstance attendant on parturition which excites such solici-

tude in the accoucheur, or exposes the patient to such imminent danger, as repeated or large losses of blood at the termination of pregnancy, or in the commencement of labour. We can readily conceive how uncertain and inefficient the treatment of such floodings must have been, prior to the appearance of Dr. Rigby's most excellent and invaluable work, who tells us that most of the authors whom he had read on this subject describe these cases as peculiarly embarrassing, acknowledging that they have always been at a loss, when such have occurred to them, to determine with any degree of certainty and satisfaction, which of the two methods of practice hitherto recommended it has been most proper to adopt, whether to endeavour to restrain the discharge by the means before mentioned for that purpose, and leave nature by her own efforts to expel the child, as is the case in floodings of the early months; or at once to introduce the hand into the uterus and bring it away by art. This doubt about the propriety of waiting, or the necessity of removing the contents of the womb, they say, is ever owing to the uncertainty of knowing the quantity of blood that has been lost; and

if it were known, to the impossibility of ascertaining the degree of loss a woman might sustain without manifest risk of life. These statements Dr. Rigby proved to be incorrect, observing, that a knowledge of the true causes of floodings, will give us all the information, which may be considered as the first requisite towards an improvement in the practice; for these floodings arise from two very different causes, which are very different in the danger they induce, and which require very opposite methods of treatment. The separation of the placenta from the uterus before the delivery of the child, and the consequent opening of its vessels, must be looked upon as the proximate cause of every considerable discharge of blood from the womb at this time; but this premature separation may occur from very different causes. These causes it is necessary to understand, that we may see the reason why the same apparent complaint should very often so widely differ in its termination and treatment. There is no particular part of the uterus to which nature seems constantly and uniformly to fix the placenta; it is nevertheless for the most part so situated, that if the woman be

healthy, and no accident befall her, it does not separate until the full term of pregnancy, nor then before the entire expulsion of the child; after which, it becomes disengaged from the uterus, and is thrown off, making room for its entire contraction, which shutting up the mouths of the vessels, effectually prevents any considerable loss of blood; for which purpose it is plain it must be fixed to some part of the womb which does not dilate during labour, namely, to the fundus or side of it. In this case, then, when a flooding comes on before the delivery of the child, it is obvious that the separation of the placenta must be owing to some accidental circumstance, to violence done to the uterus by blows or falls, to some peculiar laxity of the uterine vessels from the badness of habit, or fever, or to some influence of the passions of the mind, suddenly excited, such as fear, anger, &c.

But, from the uncertainty with which nature fixes the placenta to the uterus, it may happen to be so situated, that when the full term of pregnancy is arrived, and labour begins, a flooding necessarily accompanies it, and without the intervention of any of the above *accidental* circumstances; that is, when it is

fixed to that part of the womb which always dilates as labour advances, namely, the cervix and os uteri ; in which case, it is very certain, that the placenta cannot, as before described, remain secure till the expulsion of the child, but must of necessity be separated from it, in proportion as the uterus opens ; and by that means a hæmorrhage must *unavoidably* be produced.

That floodings which arise from these two different causes may be distinguished by the names of *accidental* and *unavoidable*, though they may appear exactly similar in their first symptoms, should terminate very differently if left to nature, assisted only by the palliating means before mentioned, cannot seem strange ; nor can it be a doubt, that of these two kinds of floodings, only one of them, namely, that which is produced by an accidental separation of the placenta, can be relieved by the use of these palliatives ; and that the other, in which the placenta is fixed to the os uteri, and the flooding is therefore unavoidable, cannot possibly be suppressed by any other method whatever, *than the timely removal of the contents of the womb* ; for, supposing the discharge to be for a while

restrained, by bleeding, medicine, cool air, &c. it will inevitably return when nature is so far recovered as again to bring on labour; in the first instance, if hæmorrhage have been checked by the use of the above means, it is not impossible but labour may come on, and the child be safely expelled by the natural pains before it returns; or, if it should return, it may not increase in quantity, as, in this case, very probably the separated part of the placenta which occasions the discharge, remains nearly the same; whereas, in the other case, in which the dilatation of the os uteri produces the separation of the placenta, *every return of pain must be a return of the bleeding*, and it must become greater and greater as the uterus opens more and more; and the placenta is in proportion detached, till it increases to a degree that exhausts the patient, and she dies before nature has been able to expel the child. That such must inevitably be the progress and event of floodings, arising from such a cause, if left to nature, is too obvious to be farther insisted on.

Admitting then that floodings are produced by these two different causes, and that they require a treatment so widely different, we cannot be at a loss, says Dr. Rigby, when such do occur to us, and we have discovered the particular cause from which they arise, how to act; as in the one case we shall be encouraged to wait, and to make use of such means to restrain the discharge as will be more particularly mentioned hereafter; and in the other we shall not hesitate to have recourse to delivery by turning the child. Dr. Rigby has not only fully proved the necessity of turning the child, whenever the placenta is fully attached over the os uteri, but he has also established the value of the practice of rupturing the membranes, when flooding appears before delivery, and the placenta is not to be felt. Of sixty-four cases of accidental hæmorrhage, treated in this way, every patient was saved, although some had lost a large quantity of blood, and were very faint, previously to the operation being performed. In many, indeed, the flooding was trifling; but even in these sufficient to excite some degree of alarm.

All practitioners are now fully agreed, that whenever the placenta *wholly* presents, the best and almost the only chance of saving the patient, is by delivering at the most suitable opportunity; and that in *accidental* hæmorrhage, the most successful practice is to rupture the membranes, and leave the case to be terminated by the natural powers; provided the flooding ceases on the evacuation of the liquor amnii. There is still, however, a diversity of opinion as to the course to be pursued where the placenta is only partially adherent to the os uteri, in which some accoucheurs invariably resort to artificial delivery; while others, and among them, my friend, Dr. Francis Ramsbotham, pursue a different plan. If not more than one-third of the os uteri is occupied by placental attachment, an attempt is to be made to relieve the patient by evacuating the waters, and allowing time for the uterus to act, carefully watching the patient, lest the draining be kept up after the membranes have been ruptured. Dr. Ramsbotham urges, in support of this practice, the great fatality which has attended placenta, and partial placenta presentations, generally in his practice, when treated by turning; and

the great danger of suddenly evacuating the uterus at any time, and especially under the state of faintness produced by loss of blood. After the evacuation of the waters, besides the blood-vessels of the uterus being very much diminished in their calibre, and allowing less blood to circulate through them, if uterine action come on, the head will, in passing through the os uteri, close by its pressure the mouths of the bleeding vessels, and in this manner suspend the hæmorrhage; and should the contractions continue, the child is ultimately expelled. Provided, however, the uterus does not act sufficiently strongly to restrain the hæmorrhage, and expel the foetus, it will be more or less flaccid, and there will be little or no impediment to the passage of the hand into the uterus, and the delivery by the feet; the only resistance being from the contracted uterus, when contraction has not taken place, there can be no difficulty; the case is, perhaps, more likely to terminate favourably when turning is had recourse to after the water has been evacuated some time, and the uterus has slightly embraced the body of the child, than when a more hasty delivery is effected; because in that case the uterus is to a

certain degree lessened in volume, there is not so sudden a diminution of bulk, and the dreaded collapse is not so likely to occur. Dr. R. has seen many cases in which this plan has been adopted, when the patient's existence was depressed to its lowest ebb, and where it had been attended with the happiest results. At the same time, should hæmorrhage continue after the rupture of the membranes, so as to endanger the patient's life, there is but one mode to be adopted, that of as speedy a delivery as possible.

SECT. IV. — *Hæmorrhage occurring subsequently to the birth of the child, and before the exclusion of the placenta.*

We have already remarked, that the third stage of parturition is the most important, and involves the most momentous consequences. The birth of the child, in natural labour, is generally accomplished by the na-

tural efforts ; and, if we except the protection of the perinæum, no exertion is demanded from the practitioner, beyond what sound discretion will enable him to bestow. This, however, is far less frequently the case in relation to the placenta ; for, without any error on the part of the accoucheur, partial detachment of this viscus, giving rise to alarming hæmorrhage and irregular contraction of the uterus, detaining the placenta in its cavity, may occur. After a well conducted natural labour we generally find, *in fifteen or twenty minutes* from the birth of the child, that uterine pain is again returning ; and, if we pass the finger along the course of the funis, we shall probably discover the placenta lying either low down in the vagina, or at the os uteri. In these circumstances, the slightest bearing on the funis secures the birth of the placenta ; and, as its situation in this case presupposes the complete contraction of the uterus, we need only remark, that its extraction is to be conducted with *delicacy and care*. *The contraction of the womb*, is the basis on which we must found all rules for the extraction of the placenta, as well as all pleasing expectations of the future safety of

the patient. By this process the womb not only diminishes its internal surface, but in a greater or less degree, it acts upon and expels its contents, and subsequently secures itself from the *risk of hæmorrhage and inversion*. The various conditions in which the uterus is found, after parturition, are dependent on the more or less powerful exertions of this principle. When we find the uterus *circumscribed, round and hard*, we know that contraction has taken place; and that neither flooding nor inversion is likely to occur. Where, on the contrary, the uterus is *large, lax, and soft* to the feel, its parietes *being so ill defined* as scarcely to enable us to ascertain its precise dimensions, we must proceed with the utmost caution. There are other conditions, varieties of these, in which the womb may after delivery be found, but as they will only require a modified treatment, we shall not particularly describe them. A diversity of management in these different states has been instituted; and, observing the fatal consequences which followed the artificial separation and delivery of the placenta, Ruysch, Hunter, and Denman recommended in all cases after the birth of the child, that the expulsion of the pla-

centa, like that of the *foetus*, should be committed to the natural powers; believing "that the same natural powers which were adequate to expel the child, were also adequate to expel the placenta." And we can easily conceive where women live in a savage and barbarous state, that little danger will ensue. Experience has, however, proved that if the expulsion of this important viscus be left to the unaided powers of uterine contraction, patients frequently die. The practice has been tried both in Holland and in this country, and is now, we believe, entirely laid aside. Different rules have been prescribed as to the precise time when artificial assistance is to be afforded. Hunter and Denman regulated their interference according to time; and, if the placenta did not come away within four hours after the birth of the child, they conceived themselves fully warranted in the employment of manual assistance. Other practitioners have formed their criterion of interference from the degree of pain, and the situation of the placenta in the uterine cavity. These rules are all individually good, but if a determinate one is to be formed, or as near an approach as possible to a fixed

law of procedure is to be attempted, much freedom must be allowed to the exertion of individual judgment and discretion. In the slighter cases of hæmorrhage after labour, we do not enjoin a hasty delivery of the placenta; if we wait twenty or thirty minutes, the uterus will in some degree have recovered its tone, the circulation of the mother will be less hurried, and the removal of this viscus will be accomplished with less subsequent risk. We need scarcely say, that before commencing any attempt at removal, we must ascertain distinctly whether *there be another child*. If there be twins, there may be a common placenta, and its abstraction before the birth of the second child might be productive of suffocation to the unborn foetus. Having determined to extract the placenta, and having placed the woman on her left side, we may lay hold of the umbilical cord with the right hand, passing two or three fingers of the left into the vagina, so as to secure a bearing on the body of the placenta; and, if the pains are occurring at intervals, it is better to wait for and co-operate with these, than to extract without them. If, however, they are wanting, we must draw down *steadily*,

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yet *gently*, in a direction from the umbilicus to the coccyx, securing each advance by a firmer hold of the funis: and, if the circumstances are such as to justify its removal, we shall seldom find much difficulty. We have now described the most simple case of extraction of the placenta, where there can exist little difference of opinion as to the propriety of the measure. And we would here again remark, that the placenta is much more readily and speedily separated from its uterine attachment, and that the uterus itself is much more likely to be found low in the abdomen, firm, circumscribed, and well contracted, if the latter part of the labour has been deliberately performed, than when, from an anxiety to terminate the process, the body and lower extremities of the child have been *manually extracted*, during the absence of uterine pain. It will occasionally happen, after the expiration of an hour or longer from the birth of the child, and when by external pressure, and the exhibition of some slight stimulant, we have endeavoured to excite the contractile efforts of the uterus, that it still continues high in the abdominal cavity, flaccid, ill-contracted, and of large size. This condition

may exist under two states of the uterus in relation to the placenta. The placenta may either be separated from its uterine attachment; and, remaining loose, cannot be excluded out of the cavity of the womb from *irregular contractile effort*; or it may be *morbidly or scirrhously adherent* to its internal surface, in which case we shall wait in vain for its natural expulsion. We have already remarked, that the placenta cannot safely be left for an indefinite period in the womb; and when we remember the solicitude of the patient and her friends, and the painful suspense which a retained placenta must ever excite in the mind of the accoucheur, and that it may be morbidly or scirrhously adherent, we cannot entertain any doubt as to the propriety of its safe and timely removal. Dr. Ramsbotham, whose *Practical Observations on Midwifery* deserve a place in the library of every obstetric practitioner, says, that "the introduction of the hand into the uterus, after the birth of the child, is, to use the mildest language, a harsh and severe measure: it always gives considerable pain, and it cannot be practised with impunity, without some risk, present or

future. It must be acknowledged that this opinion is well-founded, and yet, if any circumstances justify this measure, the *retention of the placenta, with loss of blood*, especially does so. An accoucheur cannot commence this most serious proceeding with too powerful an impression of the delicacy of the parts on which he is about to operate; but if he conduct the extraction slowly and skilfully, he will not often have to regret its performance. We are somewhat disposed to believe, that a share of the difficulty and danger, consequent on this operation, may depend on the length of time which is so often, through timidity or the dread of consequences, allowed to elapse before the commencement of the manual extraction; the womb having had time firmly to contract itself around those contents which are now to be considered as extraneous bodies, and as obstacles to its natural diminution of size, "it will rarely be necessary to exceed two hours, before recourse be had to this proceeding; more frequently its necessity will be obvious before the expiration of this time; indeed, on an average of cases, it will be found that, if the placenta be not thrown off within one hour

after the birth of the child, it is detained by some unusual cause. If hæmorrhage, or other pressing symptoms, suddenly intervene, an earlier removal will be required, otherwise every thing like hurry or haste ought carefully to be avoided." If then the placenta be retained after labour, by that irregular action of the uterus which has been denominated the *hour-glass* contraction, and hæmorrhage *supervene*, or if we have reason to suspect its *morbid adhesion* to the internal surface of the uterus, from the continuance of this latter organ in the state we have already described, and, from our inability to trace the progress of the cord to its termination in the placenta, there is no other alternative than *by the introduction of the hand*, to overcome in the one instance, the contraction, when the placenta will generally be immediately expelled; and, in the other, by the same means, carefully to separate its morbid adhesions. In order to effect this purpose, the left hand should be bared, and well smeared with lard, the woman having been previously placed on her left side, with her knees drawn up towards the abdomen,

and her nates at the edge of the bed. The accoucheur may sit on a low chair; or, which is much more convenient, he may kneel at the side of the bed. Having accomplished the introduction of the hand into the uterus, he will soon discover the cause of retention; if it arise from irregular contraction, whether it be of the longitudinal kind, or globe-like, he may advantageously apply the right hand over the uterine tumour externally, thus aiding his operations by steadying the womb, and preventing any rolling motion; the *contracted part is to be slowly and cautiously dilated*, till the hand can obtain admittance so far as to include within its grasp the whole or greater part of the placenta, when it may be gradually withdrawn. If the placenta be found partially or generally adherent to the inner surface of the uterus, the fingers must be cautiously insinuated between its edge and the womb, and carried forward till the whole mass is separated, when it may be removed as in the former case. It will not unfrequently happen, that the contractile efforts will be so violent, as to impair the sensibility of the fingers, and, indeed, of the whole hand; in

this case, we may allow it to remain for a short time at rest in the uterine cavity, but we should, if possible, avoid its retraction, as its reintroduction will give great pain, and be attended with renewed risk. If the placenta be retained merely from *torpor of the uterus*, which often happens after laborious and protracted delivery, the stimulus of the hand within its cavity will generally induce a sufficient return of contractile effort for its entire expulsion.

We have now dwelt at length on those floodings and their treatment which are occurring between the birth of the child and the expulsion of the placenta; and we are from experience disposed to believe that they generally arise from its greater or less adhesion to the uterine surface; nor are we aware of any measure to which we can look for safety but to the introduction of the hand, inducing thereby contraction of the uterus, and the consequent expulsion of the placenta. We are not always so fortunate as to secure contraction, even where we have succeeded in bringing away this adherent viscus; for, a little time ago, I was compelled to watch a patient four hours in these circumstances,

and during the whole time to maintain a *gripping, grasping action* on the uterine parietes, thus preventing hæmorrhage.

SECT. V.—*Hæmorrhage occurring after the expulsion of the placenta.*

The first circumstance requiring attention after the expulsion of the placenta, supposing we are satisfied that there is not another child, is to insure *firm and permanent* contraction of the uterus. The patient is now to be kept remarkably quiet; and it is important, if she be prone to hæmorrhage, that stimulants should not be given. The condition of the uterus should be frequently examined, and even the slight grasping of its parietes by the hand, will often be sufficient to maintain it in a state of firm and satisfactory contraction. The bandage is to be applied round the region of the uterus, tightened so much as to afford an agreeable feeling of support. It may so happen, however, that notwithstanding every precaution

the uterus may become *suddenly relaxed*, and even under a very slight degree of relaxation, if the force of the circulation is extraordinarily great, it may, according to some cases published by Dr. Gooch, in the *Medico-Chirurgical Transactions*, be able to overcome the ordinary closure of the orifices, and thus a profuse hæmorrhage may arise, although the uterus be contracted. Dr. Gooch has also noticed the fact of the *alternate contractions and relaxations* of the uterus in hæmorrhage, which every practitioner in midwifery must frequently have met with. Supposing the hæmorrhage to have been considerable, and the patient in a state of alarming exhaustion, with bleached face, and scarcely a perceptible pulse, it is evident there is no time to be lost, if the uterus does not contract, the flooding may recur, and the patient may soon be placed beyond the reach of remedies. In these cases, if the uterus is *large and flaccid*, we must not hesitate, after the exhibition of some powerful stimulant, as brandy or rum, to apply cold vinegar and water to the pudenda and loins, and pounded ice to the abdomen. I have, indeed, seen cases where these remedies were not efficient

in restraining the hæmorrhage; and I have in several instances, and with the best effect, dashed cold water from a considerable height on the naked abdomen. I shall subjoin the following cases, as illustrative of the vigorous treatment which these floodings demand; I could add many more of the same kind, but, as before observed in this treatise, I am satisfied with the insertion of one or two good examples illustrative of the practice recommended, as I feel assured where the cases are genuine, and the treatment correct, practitioners will verify and apply the rules by a reference to their own experience. My great aim is to afford information which will be available at the bedside of the patient, and to render my observations essentially practical.

On the 4th of November, 1823, Mrs. —, aged twenty-three, after a lingering labour of twenty-eight hours, was confined of a girl, her first child. The head was large, and from extreme rigidity of the parts, and the severity of the expulsive pains, she had suffered greatly before its birth; previously to the extraction of the placenta the abdominal bandage was applied, and she ex-

pressed much pleasure at the support it afforded. After fanning her, and giving a little simple gruel, the pains recurred, and the placenta was low down in the vagina before its extraction was attempted. Immediately after its removal, she lost perhaps a pint of blood; but the uterus contracted well, and she remained tolerably tranquil for twenty minutes. The uterine parietes were now most suddenly relaxed, and an alarming quantity of blood was impetuously pumped out. Cloths, wetted with the coldest water, were thrown rather forcibly on the abdomen, pudenda, and thighs; a draught of the coldest spring water was swallowed, the bandage was tightened, and the uterus *gripped* by the hand. These measures restored her from a state of collapse and syncope, and induced *firm contraction* of the womb, which might now be felt as large as a child's head, *and almost as hard*. She progressed very satisfactorily for a full hour, when, having left the room for a few minutes, I was hastily summoned to the patient, whose appearance was very alarming. The eyes were closed, the lips colourless, her extremities cold and thrown out, as in the last act of life, and the action of the heart

was scarcely perceptible. Several pints more blood had been lost, and without waiting a moment, I dashed from a considerable height, a large ewer full of cold water on the naked abdomen; poured several wine-glasses full of pure brandy down the throat, and determined to trust no longer to the unaided continuance of contraction. The uterus *was once again small*, and both my hands were now applied to its parietes, keeping up such a *gripping pressure*, as was necessary to insure a continuance of its contractile action. By the aid of the nurse, and two female relatives of the lady, this manual pressure was maintained for six hours, after which no further hæmorrhage ensued. This patient had a *very protracted and painful* recovery. It is worthy of remark, in this case, *that the hand was not introduced into the uterus*, and, where *coagula* are not preventing the contraction of this organ, I think the means now described, will generally put a stop to the hæmorrhage, without resorting to *this objectionable and hazardous proceeding*.

Mrs. —, aged twenty-seven, was confined on the 4th of July, 1824, of her first child,

after a labour of only a few hours duration. The practitioner in attendance, before I saw the patient, stated that the uterus contracted well after the expulsion of the placenta. Four hours after labour, the nurse discovered she was flooding, and requested the attendance of her accoucheur, who *applied cold cloths*, and, supposing the flooding to have stopped, took his leave. On examination of the abdomen, I was astonished at the bulk of the uterus, and from the exhausted and powerless state of the system, I was convinced that the internal hæmorrhage was large and alarming. The hand was passed into the uterine cavity, and at least, *three or four pints of coagula* were removed, after which the uterus powerfully contracted. This did not continue long; relaxation again occurred, and more blood was lost. *Brandy*, and *the griping of the uterus* for two hours, without the further introduction of the hand, permanently restrained all hæmorrhage; of course the abdominal bandage was applied. This lady continued in a precarious state for some days, and was very long in regaining her strength.

For patients predisposed to hæmorrhage during labour, I have been for some years in the habit of prescribing a less nutritious diet for one or two months preceding confinement; and in one case, which it is not important fully to detail, I have, before two successive confinements, taken away sixteen ounces of blood with decided advantage.

Some able remarks of Dr. Gooch, in the paper to which we have already referred, so entirely coincide with circumstances of daily occurrence, that I shall present them in his own words. " I could easily understand that a contraction of the uterus, which would preclude hæmorrhage in the ordinary state of the circulation, might be insufficient to prevent it during violent action of the blood-vessels; and the inference I drew was, that in cases of hæmorrhage, dependent not on want of contraction of the uterus, but on the want of tranquillity of the circulation, a mode of treatment which would produce a cool skin and a quiet pulse, would be the best for preventing a recurrence of these floodings. How often a disturbance of circulation plays an important part in uterine hæmorrhage it is

difficult for an individual to know; but I suspect sufficiently often, to deserve the especial attention of practitioners. I advise them, when they meet with patients subject to hæmorrhage after delivery, to notice the state of the circulation before labour, and if disturbed, to employ means for tranquillising it before labour comes on. I advise them during labour, to use cordials cautiously, lest the placenta should separate during an excited state of circulation. I advise them, after delivery, though the uterus may feel contracted, to be slow to leave their patient, if the circulation be greatly disturbed."

In the concluding part of this paper, Dr. Gooch recommends a practice, in which, without greater qualification than he has annexed, I cannot coincide. I refer to his opinion "that when hæmorrhage occurs after the removal of the placenta, the quickest way to stop it is to introduce the left hand closed within the uterus, applying the right hand open to the outside of the abdomen, and then between the two to compress the part where the placenta was attached, and from which chiefly the blood is flowing." I am aware that, in alarming and despe-

rate floodings, any measure, however severe, is justifiable; the intention is to save a life, which appears on the very point of extinction, and after consequences must yield to this momentous purpose. I do not deny, that as a "dernier resort" the carrying of the hand into the uterus may be absolutely necessary; but I am equally convinced, that the *gripping or grasping pressure of the womb*, commenced immediately after the birth of the placenta, when there is an habitual proneness to flooding, or when the contraction of the uterus is unsatisfactory, will *generally* supersede its employment. The introduction of the hand into the uterine cavity is always attended with *risk*, and it cannot be less so when, owing to the exhausted and powerless state of the system, the uterus and vagina may easily *suffer rupture or laceration*. It may too be urged against this practice, when it is performed *during syncope or approaching collapse*, that it must of necessity destroy *coagula or clots*, which are forming about the mouths of the bleeding vessels, and may thus originate fresh hæmorrhage. Briefly then to recapitulate what we have advanced on this deeply interesting subject, we remark that,

immediately on the birth of the child, flooding may arise; that it may depend on torpor of the uterus, rendering it incapable of expelling the placenta, or on the schirrous or otherwise morbid adhesion of this viscus to the internal uterine surface; that a variety of circumstances as to the time and manner of interference are demanding consideration; and that, while the bestowment of hasty and unnecessary assistance is to be deprecated, it should not be withheld for more than two hours, and when the hæmorrhage is alarming, immediate extraction is necessary. After the birth of the placenta, dangerous floodings, and these are by far the most numerous, may also arise; notwithstanding every effort to tranquillize the circulation, and to induce uterine contraction. In these cases, we are to apply the abdominal bandage, and cold washes to the pudenda, thighs, and loins, to maintain a constant griping pressure externally on the uterine parietes, and to support the vital powers by stimulants, if necessary, in large quantities; if these fail, we may inject cold water into the uterus, and, as a last expedient, by the introduction

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of the hand into its cavity, excite contraction; in addition to all measures, we must strictly enjoin wherever there is serious flooding, the most entire and absolute rest, not even allowing a change of posture, if it can by any means be avoided.

PART IV.

THE DISEASES WHICH BELONG TO THE PUERPERAL STATE.

CHAP. I.

The Occurrences of the natural Puerperal State.

Immediately after the placenta is expelled, the finger ought to be introduced into the vagina, to ascertain that the perinæum, or recto-vaginal septum, be not torn, and that the uterus be not inverted. Then, if the patient be much fatigued, or if she be prone to hæmorrhage, Mr. Gaitskell's belt, supposing it to have been previously applied, may be gently tightened. We are not greatly inclined to the practice of turning the patient on her back, and submitting her to the process of fastening round the abdomen a broad bandage, intended to give a feeling of agreeable support. We believe if the placenta has been slowly extracted, and if the uterus be afterwards slightly grasped by the hand, firm

and permanent contraction will generally be induced; at least, I have not unfrequently known partial hæmorrhage to arise, from the disturbance of circulation produced by this putting on of the bandage. Circumstances must, however, in all these cases, regulate our procedure; and, if any additional comfort or security can arise from this application of the abdominal roller, it certainly ought not to be neglected. A few warm napkins may be introduced between the thighs and over the vulva, to preserve the patient from the discomfort of the discharge by which she must be surrounded, *during the hour and half* which elapse previously to her being placed in bed. It is common with many nurses, to administer gruel with spice and brandy, immediately after the termination of the labour. Of this I do not approve, although there are many patients so fatigued by the parturient efforts, that they will be rendered much more safe, and uterine contraction will be much more certainly ensured, by the judicious administration of a little gruel with two or three spoonsful of brandy, than if they were left entirely alone.

As great care has been bestowed on the

description of natural labour, I now propose to be very particular in portraying the circumstances of the natural puerperal state. Thus we shall be best prepared, in both cases, to judge of what is unnatural or morbid. On visiting a patient, a few hours after delivery, we shall almost invariably observe a slight but complete febrile paroxysm, characterized by quickness of pulse and general heat of surface; and if stimulants be not administered, perspiration usually ensues, and in twenty-four, forty-eight, or seventy-two hours, the affection wholly subsides. I have known this condition produce unnecessary alarm, and convinced I am it has often, to the injury of the patient, prompted to the abstraction of blood and other unnecessary depletory measures. It ought, when moderate, to be regarded, as a natural effect of the shock incident to parturition.

The *secretion of the milk* is an object of early attention, as most of the minor and some of the more serious affections of the puerperal state, are involved in its establishment. The mammæ after delivery, become much enlarged, and there is shooting pricking

pain throughout their substance, indicative of the process about to be set up. The child should be applied within six or eight hours after its birth, if the circumstances of the mother do not forbid; having previously fomented the breasts, and washed the nipples with warm sugared milk. This secretion is sometimes deferred if the labour has been tedious or difficult, if there has been considerable hæmorrhage, or if the patient be advanced in life, in debilitated health, or if it be her first child. These circumstances almost necessarily induce some deviation from the usual course; and if the brain, or any other important organ, seems to be taking on that increased action which should naturally be directed towards the mammæ, vigilant watchfulness is required. We wish, however, to guard the practitioner against the unmeasured and invariable apprehension of milk fever in these cases. Slight affections of the cerebrum, under these circumstances, often arise, and they as often yield to moderate treatment. Nor is it at all uncommon, for the after-pains to be so increased in severity, as with the partial suppression of the lochia and urine, satisfactorily to ac-

count for this constitutional disturbance. These symptoms seldom occur before the second or third day; and if the previous treatment has been judicious, we think they will rarely prove seriously injurious, either to the patient or her offspring.

The *lochia* are generally regarded as of extreme importance by the patient and her attendants, and as the natural consequence of parturition, they merit attention. The uterus, if the labour has been well conducted, generally contracts so as to prevent any considerable loss of blood, but the mouths of the uterine vessels are scarcely ever so completely closed, as not to afford some sanguineous discharge. When we reflect on the very large quantity of blood with which, during pregnancy, these vessels have been supplied, and on the consequent impulse of the circulation by which they have been influenced, we can easily conceive, that for the first few days after delivery, they must by draining alone, throw off no very small quantity of blood. If a too sparing loss has accompanied parturition, and the patient be of full plethoric habit, we can readily understand the advantage derived from an abun-

dant flow of the lochia. In other instances, more blood may have been lost during or immediately subsequent to labour, and the circulation being reduced within its natural limits, the return of the uterus to its unimpregnated size, will be accompanied by a diminished lochial discharge. I have seldom observed, in healthy women, any great flow of the lochia after the third or fourth day from the birth of the child, although immoderate exertion, mental agitation, and the attempt to get up, frequently induce a return of the discharge and sometimes of an entirely sanguineous colour. I am seldom induced, even by the solicitations of the patient and her nurse, who often attach undue importance to the copious flow of the lochia, to administer any remedy to augment their quantity; but it is often a matter of moment to diminish *excessive lochial discharge*. We have already alluded to some circumstances which may induce this affection, and want of tone in the system, principally occasioned by a daily return of fever, may perhaps be regarded as the most frequent. It will be injurious to exhibit port wine and tonics before this febrile excitement is subdued; and we

recommend attention to the stomach and bowels, a watchful regard to the quantity and quality of the ingesta, as puerperal patients often err in the kind and amount of their food; the exhibition of saline effervescent with the tinctures either of hyoscyamus or opium, removal from a confined to a spacious apartment, and country air and attention to the state of the rectum. If the lochia continue excessive after the full employment of these measures, tonics of a general and local kind may be used. It sometimes happens, that small coagula become entangled in remnants of the involucra, and by the partial contraction of the uterus, are shut up in its cavity, giving rise to extremely severe after pains, and also to hæmorrhage: these may remain behind for some days or even weeks, and originate an extremely offensive and loathsome discharge, vulgarly denominated "the green waters." Its acrimony is so great, that the excoriation of the parts commonly occurs, sometimes combined with a low febrile disposition, almost of the hectic kind. Here the patient should be allowed generous diet and porter or ale; calumba, the quinine and sulphuric acid may also be given: injections

composed of the liquor aluminis comp. the decoct. quercus or port wine and water, will also prove highly beneficial.

It is very desirable to be well acquainted with the *natural condition of the uterus*, in the first few days after delivery, as in some cases the accuracy of our distinction between its healthy and morbid circumstances, may entirely depend upon this knowledge. We have already remarked, that immediately after parturition, the uterus, from having been sufficiently capacious to contain the fœtus and its appendages, becomes so contracted in its dimensions, as scarcely to exceed the size of a child's head. A variety of circumstances, however, may influence the degree of its contraction, all which deserve consideration in any opinion we may form of the subsequent safety of the patient. In a poor woman, who flooded excessively, subsequently to the birth of the child, and died eleven days afterwards, I found the uterus nearly *twelve* inches long, its internal surface being covered with coagula and the remains of the decidua, the place where the placenta had been attached being visible from its darkened colour. If parturition has

been entirely natural and the patient robust and healthy, the uterus will, on pressure for the first few days, evince little, if any tenderness, and will be found *round, distinct* and *firmly contracted*, in all its parts. If the labour has been unusually rapid, with a predominance of spasmodic effort, the uterus will be strongly contracted, but for many days *extremely tender* to the touch, without, however, any great danger, if *carefully watched*, of after inflammation. Again, the degree of hæmorrhage, during parturition, will influence uterine contraction, rendering it necessary for the accoucheur when it is only imperfectly accomplished, to be upon his guard. In the most common kind of flooding, or that which occurs subsequently to the expulsion of the placenta, I am principally solicitous about the contraction of the uterus, for the first twelve or twenty-four hours succeeding delivery, as in a practice of some years, I have met with *very few instances of hæmorrhage after that period*; the condition of the uterus after this time being more intimately associated with other affections. My own rule is, never to leave a patient until *one hour and a half* after the termination of labour;

and, if at the expiration of this time, the uterus is well contracted, my fears of hæmorrhage, independently of contingencies, are nearly at an end ; perhaps there is no rule in obstetric practice deserving of more implicit regard than this. The practitioner of course waits till the child is born, in general the simplest part of the process, and in accordance with established usage, he does not now, as formerly, quit the house till the placenta is thrown off ; but almost instantly after this is completed, pressed probably by other engagements, he leaves the patient, perhaps, in the most critical moment, with a hurried pulse, under a high degree of excitement, and precisely in those circumstances, that a very slight additional impulse, either of a mental or physical kind, is quite sufficient to induce alarming and fatal loss of blood. It is needless to add, with what facility and comfort these events may be averted or controlled, by the presence and the exertions of the accoucheur. "A week after delivery, says Burns, the womb is as large as two fists : at the end of a fortnight it will be found about six inches long, generally lying obliquely to one side. The inner surface is still bloody, and par-

tially covered with a pulpy substance like decidua. The muscularity is distinct, and the orbicular direction of the fibres round the orifice of the tubes very evident. The substance is whitish. The intestines have not yet assumed the same order as usual, but the distended cœcum is often more prominent than the rest. It is a month in general before the uterus returns to its unimpregnated state, but the os uteri rarely, if ever, closes to the same degree as in the virgin condition."

After pains. These are produced by the contractile efforts of the uterus to regain its original unimpregnated size, and they are often accompanied with severe suffering, if *coagula*, to any extent, remain in the uterus. It may perhaps be necessary to caution the young practitioner against supposing that they are the forerunners of abdominal or uterine inflammation, and the distinction is not at all difficult. In even the mild form of peritonitis, there is fixed tenderness of the abdomen, and the pressure of the hand, even the lightest pressure of the fingers, occasions acute pain; there is generally febrile excitement beyond that of ordinary occurrence, the pulse is small and quick, and the secretions

sparing. After pains occur in paroxysms, quickening the pulse only during their continuance, and, instead of painful sensations produced by the touch, frictions over the lumbar and uterine regions, impart great relief.

The *treatment* of the natural puerperal state is exceedingly simple, and I believe that many of the morbid deviations which subsequently occur, may be attributed to a want of regard to this fact. It is undoubtedly true, that great improvement has of late taken place in this branch of practice. Hot rooms, closed curtains, stimulant food and drinks, with many other things, equally injurious, are now decidedly forbidden, and the treatment generally adopted by intelligent practitioners bears out the common remark, that the lying-in room is not necessarily one of sickness. We have already alluded to the after pains; and to alleviate their severity as well as to tranquillize the system after the hurry and fatigue of parturition, it is advisable to administer *half or one grain of solid opium*. We do not advocate large and repeated doses of this medicine, as they not only produce fever and other unpleasant effects, but they suspend

those healthy contractile efforts, by which the uterus expels coagula and regains its former size. I have given the following draught with much satisfaction; it induces and maintains moderate perspiration.

R Misturæ Cetacei, 3vß.

Sp. Ætheris Nitrosi, ʒxxx.

Tinct. Camphoræ Comp. ʒxx.

Aquæ Ammon. Acet. 3iv. M.

ft. haustus sextis quibus horis sumendus.

A dose of castor oil or of some other mild aperient, ought to be exhibited within the first *twenty-four hours*, and if the bladder has not been relieved before this time, I seldom hesitate to introduce the catheter. The child, as before observed, is to be put to the breast within six hours of its birth, and it is particularly important to allow the mother nothing beyond barley-water, tea, gruel or chicken broth for the first *forty-eight hours*. This is a general rule, there are exceptions. To avoid noise, exertion and company, even of those friends with whom the patient is on terms of intimacy, for a few days after delivery is absolutely essential. In delicate women, and

especially if there has been hæmorrhage, we cannot too strongly enjoin the *recumbent* posture, not even allowing the half sitting half lying position, which produces much fatigue. The debility so often occurring in puerperal patients, towards the latter end of the month, is frequently owing to a disregard of this injunction; and there can be no doubt, that to too early getting up and to premature exertion, prolapse of the uterus and the general relaxation of parts is almost invariably attributable. We think that few women will bear to be got out of bed before the fifth or sixth day, and a later period than this, will in many cases be advisable. On the whole, the natural puerperal state is by no means one of difficult, though of careful management; at the same time we are well aware, that the shock of parturition, inflammation, hæmorrhage, intestinal and puerperal irritability may occasion deviations, which will require for their treatment the highest exercise of talent and medical discretion. It is not possible to inculcate too strongly *wa chfulness*, not only during and immediately after labour, but throughout the first *fortnight* of the puerperal state.

CHAP. II.

Of the Morbid Occurrences of the Puerperal State.

It must be evident, that in a treatise like the present, every morbid puerperal deviation cannot be noticed. We shall confine our attention to a few of the most prominent, referring our readers for more elaborate information to some of the valuable works already mentioned. If we have before insisted on the great necessity for correct diagnosis in parturient affections, it must be allowed, that a still higher necessity for similar accuracy, exists in the diseases of the puerperal state. In the former class of morbid occurrences, we look forward to delivery, as the natural termination of much of their danger; but in puerperal disease, the safety of the patient will almost entirely depend on a correct distinction and on a correspondently correct and vigorous treatment. The necessity for a careful and extensive consideration of the altered circumstances,

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produced by the birth of the child, must be apparent on the slightest reflection. *The pressure inflicted on the cerebrum*, during the expulsive efforts of the uterus, leaves it in a state exceedingly liable to morbid affection. *The sudden diminution of the size of the uterus*, and the equally *sudden distribution* upon other parts, of the large quantity of blood hitherto expended on the womb itself, *the loaded condition of the intestines*, often attributable to the mechanical interference of the enlarged uterus—and *the commencement of the secretion of milk*, may all become so many sources of morbid action, in patients, predisposed to disease, or accidentally subjected to additional excitement.

We may then attribute the diseases of this state to several causes, arising out of the varied effects produced by the sudden transition of the uterus, from the gravid to the unimpregnated condition; and amongst the principal may be enumerated the *shock of parturition*, *intestinal irritation*, *loss of blood*, and perhaps *puerperal irritability*. It is scarcely necessary to remark, that these causes, and those enumerated in the preceding paragraph, may singly produce disease of

a decided and marked character, as *the various species of inflammatory or other puerperal affections*, or by their combination, they may give rise to *mixed cases*, partaking partly of inflammation and partly of irritability, connected with or subsequent to parturition.

SECT. I.—*Of the Condition of the Stomach and Bowels.*

On this part of the subject, it will be seen, that I have availed myself largely of the assistance afforded by the late valuable publication of my friend, Dr. Marshall Hall, on "*Some Diseases incident to the Puerperal State.*" These dissertations are so entirely in accordance not only with my own views, but with those of the profession generally, as to render necessary some peculiar acknowledgment for the help they must afford, in the description and treatment of this most important class of diseases.

There can be no doubt of the great necessity for a correct distinction between disorder, produced by some source of irritation in the stomach and bowels and pure inflammation, either of the brain or peritoneum. In the former, which generally occurs about forty or fifty hours after delivery, there is commonly violent rigor after its commencement. This, says Dr. Hall, is an important fact, for rigor has been considered as denoting puerperal inflammation, and essential to the latter disease.

“Neither of these suppositions is true: for puerperal fever may occur in a severe and fatal form, without rigor; and the severest rigor may only portend an attack of the effects of intestinal irritation; and in general, the latter is attended with severer rigor than the former. In the attack of intestinal irritation, there is usually, after the rigor, great heat of the surface. I have already observed, that this is by no means an essential part of puerperal inflammation; indeed, I do not think that it properly belongs to the latter disease, but that when it does occur with inflammation, it denotes a mixed case and the co-existence of intestinal irritation, in which there is

usually earlier and even greater frequency of the pulse, than in cases of puerperal inflammation, the pulse being also fuller."

Intestinal irritation induces symptoms which are similar to those of the most acute phrenitis, or to the most acute peritonitis. In the former, the freest blood-letting must be aided by purgative medicines, whilst in the latter, the freest and fullest evacuation of the intestines must be aided by blood-letting. In the affection of the head from intestinal irritation, there is frequently the severest pain, and the utmost intolerance of noise, light, and disturbance of every kind. When the abdomen is affected from intestinal irritation, there is general pain, tenderness upon pressure, and frequently tumidity. The evacuations of the patient are to be examined, and the diet attentively enquired into. Blood-letting injudiciously employed, is, perhaps, the most frequent cause of a fatal result. The following case occurred to myself last year, and it may tend to illustrate the distinction, which in treatment must obtain, between intestinal irritation and affection of the cerebrum, arising independently of this cause.

Mrs. —, æt. 33, was confined August 28, and for *ten* days went on well, quite free from any uncomfortable symptom. Early on the morning of the 8th of September, I was hastily summoned to Mrs. —, and found her complaining of intense pain over the eye brow, vertigo and a slight loss of power over the left arm and side. She spoke indistinctly and the face was much flushed. As the pulse was quick and full, and the skin hot, I was about to bleed her from the arm, but being greatly surprised at the sudden accession of the symptoms, I made strict enquiry into her diet, and I found, that at eleven o'clock the preceding night, she had eaten ten or twelve raw oysters. This at once dissipated my doubts, and I immediately gave her a pint of warm tea, directly afterwards exhibiting an emetic of ipecacuanha. In the course of a few minutes she vomited freely, and in an hour was greatly relieved: four grains of calomel, followed by a common saline aperient, were next prescribed, and five or six copious motions were produced. Every alarming symptom now disappeared, but she had a painful and protracted recovery. "The remedies of intestinal irritation and its

effects, we would enumerate and arrange in the following order: first, the full evacuation of the intestinal canal; secondly, blood-letting; thirdly, some kindly anodyne; fourthly, leeches, cupping, a lotion, a liniment, or a blister, according to the circumstances of the case, for the topical affection; fifthly, the mildest nutritious food; sixthly, the most absolute quiet, and the most perfect security from light, noise, disturbance and every other source of excitation; seventhly, every soothing plan; eighthly, great coolness and free ventilation of the sick room; and, lastly, a constant watching over the patient during sleep, to avoid the injurious effects of turbulent dreams on the one hand, and of too long sleep and fasting on the other."

"In regard to the state of the alimentary canal, it is quite obvious that an emetic is the proper remedy when the symptoms can be attributed to any indigestible substance taken. And I would recommend this remedy, even although it might appear, from the lapse of time, unlikely that the injurious substance should still remain in the stomach.

“ When the case originates from intestinal irritation, I would earnestly recommend that the first remedy should be an emena, consisting of three or four pints of warm water, very slowly and gently forced into the bowels. This should be followed by an active purge. And this should, in due time, be followed by a repetition of the injection. I need scarcely observe, that the evacuations should be immediately carefully examined, and the effects upon the symptoms of the disease be watched. To abate the general heat and excitement of the system, to relieve the head or the abdomen, and to ensure perfect safety, the patient should, in cases in which the strength is not particularly impaired, *be raised into the erect posture, and be bled until faintness be induced.* This effect also should be carefully watched and observed. If it occur from the loss of a small quantity of blood, it confirms the diagnosis ; if it do not occur until much blood have flowed, it should suggest the suspicion of more than mere intestinal irritation,—of one of those mixed cases which so frequently occur.

SECT. II.—*Of the effects of the Loss of
Blood.*

The immediate effects of hæmorrhage have already occupied a large share of our attention, and I purpose now to offer a few brief remarks on the injurious influence which large losses of blood so generally exert on the puerperal state. From difficult and instrumental labour, patients very often recover remarkably well, and even where there has been considerable flooding, robust women sometimes pass through the stages succeeding parturition, with but little diminution of strength; this however does not often happen, as a series of painful and alarming symptoms are much more commonly the result. It is very important to understand the nature of the mischief occurring after excessive loss of blood, as the most serious symptoms arise from affection of the brain, and by a careless observer, such affection would almost inevitably be considered and treated as inflammatory. This is the point to which I am

solicitous to attract the attention of the practitioner. The symptoms about to be detailed may arise, either from one large hæmorrhage, occurring either during or immediately after parturition; or they may be produced by continued smaller losses. They consist, in throbbing of the temporal and carotid arteries, a "ticking" as of a clock in the head, and this sensation is sometimes scarcely indurable; vertigo, dimness and uncertainty of vision, singing in the ears, mental disturbance and hurry, frequent disposition to syncope, especially on slight exertion, palpitation of the heart, and many other anomalous occurrences. If the loss of blood has been so great as to preclude permanent reaction; the vital functions and especially of the brain, will become increasingly impaired. Instead of watchfulness, there will be augmented tendency to dosing; the respiration will be stertorously performed; the sphincters will partially or entirely lose their power, there will be accumulation of the bronchial secretions, feeble and hurried action of the heart and arteries, evolution of flatus in the stomach and intestines, and at length dissolution. It is manifest that medical treatment can avail

but little, in circumstances so distressing ; but where the reaction although violent, is associated with a higher degree of vital energy, discriminating treatment will generally lead to ultimate, though protracted recovery. It is a singular fact, that when the lancet has been employed in these cases with temporary benefit, it has eventually added to the severity of the malady. "At length," says Dr. Hall, whose observations on this subject are confirmed by my friend Mr. Cooke, in his able translation of Morgagni, "I discovered by careful observation, that the symptoms which were relieved by blood-letting were those of reaction, and the mode of relief the substitution of syncope, that the relief endured, as long as the state of faintishness continued, but disappeared as this state gave way to the rally and reaction of the vital powers." I have seen one case, in which I am persuaded, that the symptoms of reaction already described, were considered as indicative of inflammation, both in the brain and heart, and where one large and a subsequent smaller bleeding, deprived the lady of all chance of recovery, a state of fatal syncope

having been induced.* After this history of the disease, I do not consider it necessary to add cases, as the practitioner can scarcely fail to be on his guard, when such symptoms as those now described occur after flooding : he will of necessity, abstain almost entirely, from the use of the lancet, remembering that although it procures temporary relief, it will ultimately increase the severity of the affection : leeches are not liable to this objection, and are therefore an appropriate remedy : a blister low down on the nape of the neck may be applied with benefit, if the patient be not very irritable. The cupping glasses may also be employed previously to the blister, and the æther lotion to the head, will induce a beneficial effect by evaporation.

The stomach and more especially the bowels, which are almost invariably deranged after hæmorrhage, next demand attention, and mild aperients and the warm water in-

* For the description of a peculiar and unfrequent though fatal kind of fainting, arising most probably from disturbance of the circulation, which occurs within an hour or two after delivery, I refer to my friend Dr. Conquest's *Outlines of Midwifery*.

jection are the best remedies. Fomentations of the feet with warm water, repeated frequently throughout the day, I have known to impart great comfort and tranquillity. An anodyne may be safely and very usefully exhibited, when the head, the heart and the alimentary canal have been thus relieved. It is very important, that during the action of these several remedies, nourishment of a light kind, should be given frequently and in small quantities. There is one point on which it is necessary to dwell. The patient should *not* in puerperal affections generally, and especially when feeling the effects of loss of blood, be allowed to suckle her infant. The fatigue, the excitement, the great anxiety, with diminished powers, to afford a good supply, all tend still farther to impair the chance of a satisfactory recovery.

CHAP. III.

Of Puerperal Peritonitis.

Every approach to inflammation in the puerperal state excites apprehension, and with the exception of epidemic puerperal peritonitis, there is no form of disease which requires for its treatment greater discrimination and promptitude. Most authors consider this affection as occurring either in the uterus and its appendages, or as confined to the peritoneum, or (which is perhaps still more common) as implicating both these structures. It may attack either in an acute or insidious form; and in the latter, it may perhaps have existed previously to parturition. We have already attempted to distinguish between puerperal peritonitis, and severe after-pain; and as the principal characteristic of the former, we must again mention *pain, induced or aggravated by abdominal pressure*. It may occur within twenty-four, or thirty-six hours after delivery, and is ac-

accompanied, to a greater or less extent, by *frequent pulse, rigor, heat of skin, and pain in the head, sickness and vomiting, a suppression of the lochia, and of the mammary secretion.* An attentive observer will also be struck *with the expression of extreme pain and anxiety in the countenance,* more especially on pressure. In the progress of the disease, if not early relieved, the respiration becomes hurried and anxious, and is principally performed by the muscles of the thorax, and the diaphragm, the abdominal muscles rendering little or no assistance; the belly becomes tumid and very prominent; the vomiting continues; and the pulse increases in frequency and diminishes in strength. The patient is greatly dejected, and has a depressed, sunken countenance, with an almost entire loss of muscular power. Sometimes too, there are alternations of delirium and dosing, or unrefreshing sleep. If the patient is to recover, instead of the exasperation of symptoms now described, the pain will gradually abate, the pulse will become fuller and slower, the respiration more easy, and there will not unfrequently be some degree of uterine hæmorrhage, or, at least, a rather

sudden and abundant flow of the lochia, followed by the secretion of the mammæ.

As the morbid appearances induced by this disease are well known, I shall not stop to detail them.

The treatment of puerperal inflammation within the abdomen is very simple, and does not admit even of medical controversy. The *first and great remedy* is the early abstraction of blood by the lancet; and on its bold, yet judicious repetition, will almost entirely depend the recovery of the patient: other remedies are valuable, but they are only subsidiary; after bleeding they may and do aid in completing the cure, but without the previous abstraction of blood, they are almost entirely useless. "The lancet," says Burns, "is the anchor of hope; it may indeed be pushed too far; it may be used by young practitioners, in cases of spasm, mistaken for peritonitis; but the error is safer than the contrary extreme; for, of the two evils, debility is more easily removed than inflammation. If the patient bear bleeding ill, and is not relieved, when it is first used, I apprehend that the case has not been simple peritoneal inflammation, but puerperal fever. If she

bear it well, and the pulse becomes slower and fuller, and the pain abates, we are encouraged to repeat it." As to the repetition of bleeding, and the manner of conducting it; I think it most important to remark, not only in reference to this, but to all puerperal diseases, that the mode proposed by Dr. Hall, *to place the patient upright, and to bleed to incipient syncope, is one of extreme value,* affording at once, perhaps, the safest rule, and the best diagnostic in these cases. If the affection be inflammation, much blood will flow before syncope will occur; and inversely, if much blood has flowed, the case is, most probably, decidedly inflammatory. In intestinal fever or irritation, on the contrary, early syncope from venesection is a certain, safe, and diagnostic event. In the first case, the patient will generally require to be soon visited and bled again; in the second, the attention must be fixed more particularly on other remedies, especially purgatives. There may, even after the fullest employment of general blood-letting, remain tenderness in the inflamed parts on pressure: and here, topical bleeding by leeches is peculiarly beneficial. The utility of purgatives

requires no comment; in conjunction with bleeding, they are quite sufficient to subdue the disease. A difference of opinion prevails as to the efficacy of blisters: for myself I should scarcely ever neglect their application, procuring the sleep which they may perhaps interrupt, by other means. It is scarcely necessary to caution the practitioner, that nothing beyond tea, gruel, or mild chicken broth, ought to be allowed during the existence of inflammation.

CHAP. IV.

OF MIXED CASES.

SECT. I.—*Puerperal irritability; sometimes, but not invariably, involving inflammation.*

Under the name of puerperal irritability, I wish to include certain peculiar affections of the system, arising after delivery, which, although they assume some of the appearances of acute and inflammatory disease, often depend on other causes than inflammation, and require a different or very modified treatment, for I believe that after mild aperients, no remedies will be so quickly efficient as slight cordial tonics. I have frequently in these instances found the pulse quick and sometimes rather strong, the functions of the brain imperfectly performed and a certain affection running through the whole system, plainly indicating that all was not right. Let it however be understood, that my observations on this subject are not to be regarded as matured and complete, but only as

furnishing a *slight* foundation, on which the history of these affections (and they are by no means an inconsiderable class) may hereafter rest. Many of the causes which after parturition originate these disordered actions, would not at other times be productive of injurious influence. I fully concur with Dr. Marshall Hall, in attributing the great mass of affections, occurring in the puerperal state, either to the shock of parturition, to loss of blood, before or after delivery, and to intestinal irritation. The last, however, I consider a consequence, in some instances, rather than a cause, for although without doubt, intestinal accumulation which has existed previously to labour, may, and does frequently produce its injurious effects after delivery, yet it is equally certain, and it serves partially to illustrate my view of the subject, *that a predisposition to intestinal disorder*, does sometimes exist after confinement, capable of being excited into injurious activity by articles of diet, which at other times, would be productive of no inconvenience. Thus for instance, oysters in any form, may generally be taken before delivery, with complete impunity, but afterwards, al-

though a patient may be remarkably well, having gone through the stages immediately succeeding labour very satisfactorily, if she eat them in any form, and the same observation is true of other articles of diet, will have cerebral irritation and perhaps convulsions almost immediately induced. Now if another fortnight was allowed to elapse before resorting to this kind of diet, no such evil consequences would occur ; plainly showing, *that there is a peculiar kind of sensibility existing in these circumstances*, which perhaps for want of a better name we denominate “ puerperal irritability,” and to which these affections may be attributed.

These cases, which have lately excited some degree of professional attention, may exist almost independently of the three causes, to which we have just now alluded, at least, the bowels may be in a healthy state, the loss of blood during or after delivery may not have exceeded the usual and desirable quantity, and the shock of parturition may have been scarcely felt. If it be urged against this discrimination of diseased actions, that it can be rarely necessary to investigate their details so minutely ; as the treatment cannot

greatly vary ; we reply, that it is precisely for this reason, that the treatment to be successful, must be different, that we have made the attempt at their distinction. We acknowledge, that these affections put on inflammatory appearances, and from the implication of the brain in the mischief, we may very reasonably suppose, that delayed or mild treatment will avail for no other purpose than an evil one. It is however true, that here, if we either bleed or purge largely, we injure the patient, while if we moderately leech, and exhibit the mildest aperients, urging their repetition, if necessary, we confer great benefit. A case in illustration lately occurred to me. A lady of twenty-six naturally healthy, was safely confined of her second child. The labour was easy, and the after loss of blood not more than desirable. The bowels were early relieved by castor oil, and for four or five days she went on well. I ought perhaps to say, that her husband was travelling on the continent, but this was not unexpected, nor was she in any suspense, as to his comfort and safety. On the sixth morning after parturition, during breakfast, she had very slight rigor, which was

succeeded by heat, and ultimately by perspiration, the pulse being scarcely increased in fulness; she soon complained of uneasy sensations about the head, and although the bowels were almost immediately relieved by castor oil and a large enema, no scybalæ were discernible. Pressure on the abdominal region was not productive of pain, and the uterus although firmly contracted, was not tender to the touch. *I ordered a brisk purgative, leeches to the temples, cold lotion to the head, and enjoined absolute quiet.*

Sunday. She appears worse to-day; her bowels have been *twice* fully relieved, and the motions are slightly tinged with bile. Pulse eighty-eight, neither full nor hard. Her fits of languor are very distressing, and she cannot bear either light or noise; the pupils are not dilated. Pressure on the abdomen or thorax can be borne without the slightest pain, and she can grasp equally well with both hands.

Appr. Hirudines, No. xii. temporibus.

Emp. Lyttæ nuchæ.

Monday. Much the same; does not appear improved either by the leeching or blistering. Bowels open, urine plentiful,

not high coloured. *Let her take thirty minims of the sp. eth. aromat.* every two or three hours.

Tuesday night. Expresses much satisfaction with the effects of the draughts, and says, "she should have died without them." It is not necessary to pursue this case further, every threatening symptom disappeared under the use of this remedy. Several cases like the present, have since occurred to me, and I have received circumstantial accounts from several of my professional friends of similar affections successfully treated by similar means. It will, perhaps, be premature to indulge in further observations on the source of this form of "mixed case." Whether it arise entirely independently of the causes generally producing puerperal disease, or whether it be occasioned by their inexplicable combination, varying as the influence of one or other of them may predominate, is a subject for further investigation.

SECT. II.—*Of Puerperal Mania.*

We would here insert the following extract from the commentaries of Dr. Hall, as containing our own sentiments upon puerperal delirium or mania. “There is a mixed case which shews itself under a still different form from any which have hitherto been described:—it is *puerperal mania*. I believe this disease to result, in general from all the circumstances following parturition combined; but chiefly from the united influences of intestinal irritation and loss of blood. I purpose to pursue this subject hereafter; in the mean time, however, I would observe, that I am persuaded that real puerperal phrenitis is comparatively a rare disease,—that puerperal mania is seldom of an inflammatory character, and that it is especially to be treated by those measures which are suited to the mixed case of intestinal irritation and exhaustion. This opinion is confirmed by the fact of mania occurring from undue lactation, as well as from the circumstances of the puerperal state. I am

inclined to attribute much more to the combined influence of irritation and exhaustion, than to the mere "state of the sexual system which occurs after delivery," which has been assigned as the chief cause of the morbid affection by Dr. Gooch, in a most interesting paper upon this subject, in the sixth volume of the Transactions of the College of Physicians, p. 280. Although I would by no means exclude the influence of this principle altogether, there is ample evidence in Dr. Gooch's cases of the influence of intestinal disorder; and the events of labor, and the circumstances of lactation, ever add to this a state of exhaustion. This view is the more important, because it directly suggests the proper mode of treatment, which consists in restoring the system to a due state of health by every means in our power, while we adopt every measure which can soothe and allay the morbid irritability of the nervous system.

I am confirmed in this view of the nature of puerperal mania, not only by a careful investigation of its causes, and the good effects of the remedies which I have mentioned, but by having met with the symptoms

of intestinal irritation, as a prelude to those of mania. There are frequently many of the appearances of disorder of the general health described in the former part of this work; sometimes jaundice even; and the state of the complexion, and of the alvine evacuations, leaves no doubt as to the influence of the morbid condition of the intestinal canal. Blood-letting plunges the patient into a state of danger, perhaps into one of irretrievable sinking. I leave this interesting subject to be discussed upon some future opportunity, earnestly recommending to the reader, in the mean time, the study of the paper already quoted, by Dr. Gooch, and especially the following observation:—“ If every patient who has fever, is furious, and shrinks from a candle, is judged to labour under phrenitis, mania will be mistaken for it, and, what is worse, mistreated.”

This short notice contains the principles of the nature and treatment of this disease. It will be obvious, that there is no slight degree of analogy between this affection and what we have termed puerperal irritability. The causes and the remedies are much the same; the difference probably arising out of

predisposition. I am persuaded that by bearing these observations in mind, much erroneous practice will be avoided. I have known but two fatal cases of this malady, one was bled lavishly once, the other repeatedly. If intestinal irritation were removed, the powers gently restored, and every means adopted which could calm and soothe, I am persuaded that few patients would die. I do not say, that leeches are not to be applied to the temples; together with the æther lotion they certainly constitute *a very* valuable remedy. Repeated and full doses of the extractum hyoscyami are also very useful.

CHAP V.

Of Epidemic Puerperal Peritonitis.

We object to the term puerperal fever as being inappropriate in a case which is essentially and distinctively inflammatory. We have added the epithet *epidemic*, because it is this which gives the dreadful character to the disease. To the symptoms of common puerperal peritonitis, rigor, heat of surface, headache, frequency of the pulse, &c. is generally added a character of overwhelming virulence. Each epidemic too is peculiar, differing from any other, only retaining the character of inflammation, and requiring the most prompt use of the lancet.

This disease is occasionally conjoined with erysipelas and purpura, circumstances which do not obscurely point out its character and distinctive tendency. It has not been our lot to witness the epidemic form of this disease, and we are so anxious not needlessly to enlarge the size of this volume, that we think it best to refer to *the* work on the sub-

ject, which should be in the library of every physician. It is the tract of Dr. Gordon on the Epidemic of Aberdeen of 1789 and 1792. This work is so judicious and so concise, that it is at once the best and safest guide to the practitioner in regard to this affection. We must not, however, omit to mention the works of Armstrong, Hey, Campbell and M'Intosh, which may well be said to supply the deficiency, if any remained, of Dr. Gordon's pamphlet. The result of the experience of all these writers is, that the disease is essentially inflammatory, and that its cure is blood-letting, to which purgatives are to be added; its progress is rapid, its treatment must, therefore, be energetic and prompt; its natural tendency is to a fatal event, which can only be averted by the most watchful eye to seize the very first symptom.

APPENDIX.

For the substance of the two following papers, on some points relative to the "Surgery of the Abdomen," and on "Transfusion," I am indebted to the liberality of my friend, Dr. Blundell. It will be seen that they are, in some measure, extracted from a small volume, entitled, "Researches Physiological and Pathological," sometime since published by Dr. Blundell, with the addition of *three cases of the extirpation of the entire uterus*. One of these has completely succeeded, and the encouragement afforded by each of them is gratifying. I cannot refrain from the expression of my opinion, that after the lapse of a few years, the principles attempted to be established in this paper, will form the basis of an improved system of abdominal surgery. Every lover of his species must regard, with the highest satisfaction, any

approximation to the successful removal of a cancerous uterus. Hitherto such a case has been regarded as destitute of all hope, and when, by induction from a series of ably performed experiments on the brute creation, sufficient probability of success is insured to justify similar operations on the human female, our satisfaction is only equalled by the fearful hopelessness formerly entertained. The account of the two unfortunate cases will have this good result; it will secure great caution previously to the performance of this most arduous operation, and while the number of successful instances may advance but slowly, we shall be spared the recital of cases, where the operation had never any chance of a beneficial issue.

SURGERY OF THE ABDOMEN.

Of all the branches of Surgery there is none, I conceive, which in this country admits of greater improvement than the Surgery of the Abdomen, the great importance of which it is unnecessary to enforce. With a view to this improvement it is, that I have been induced to accumulate the following Facts and Observations; and in laying them before the Profession, it may be proper to remark that, where there is no observation to the contrary, I can vouch for their being substantially correct.

In four experiments the left kidney was taken out of the rabbit, through an incision upon the outer edge of it, about an inch long, very large for the bulk of the animal; the kidney was drawn up through the wound, and the superior half of the peritoneal attachment, thus put on the stretch, was, together with the vessels, included in the ligature. The rabbits were of a spare habit, and were under their full size, as they had not reached their puberty. Of these animals,

1. The first died about sixty hours after the extirpation, with inflammation of the abdomen.

2. The second died about four and a half days after the operation, with the same disease strongly characterised.

3. The third rabbit recovered, lived for five or six weeks and then died, from a cause which ill health prevented me from exploring.

4. And the fourth also for a short time recovered, fattened, and grew, but at the end of five or six weeks it died in like manner, with a sack in the seat of the extirpated kidney, formed by the peritoneum, and filled with a semi-fluid, in colour and consistency like custard; the cyst was not burst; the remaining skin was, *I think*, enlarged; the spleen was black, the liver was dark, the kidney was rather pale.

In seven experiments I took out the spleen; four of the rabbits were of spare habit, and the same size with the former, and three of them were full-grown bucks, with the omentum, kidney, and other parts loaded with fat. Of the full-grown buck rabbits,

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5. The first died about three complete days after the operation, with abdominal inflammation.

6. The second died about four days complete after the operation, with well-marked inflammation of the peritoneum, as in the preceding case.

7. The third recovered for a time, and seemed likely to survive, but three months and a half after the operation it died with a diffused peritonitis, and a large sack between the left portion of the liver and stomach, as big as a large orange, and full of a fluid, like whey and custard mixed.

Of the smaller rabbits,

8. The first died five complete days after the operation, with purging and inflammation of the peritoneum.

9. The second recovered for a time, but at the end of six months began to pine away gradually, like the former (7), and died ultimately with inflammation of the abdomen, effusion of coagulable lymph, firm adhesions, and a cyst in the region of the spleen, as large as the kidney of the animal, and full of a thin pus.

10, 11. And the remaining two recovered permanently. One of them being alive, well and fat at the present time: about five years after the operation, Oct. 1828.

In five rabbits I opened the abdominal cavity over the bladder to the extent of half an inch, in the course of the *linea alba*, punctured the *fundus vesicæ* with a lancet, and secured the aperture by ligature. Of these rabbits,

12, 13, 14. Three recovered completely, and were killed for inspection; and two died.

15, 16. One of them, fourteen days after the operation, with the external wound unclosed; the other, seventeen days after the operation. Both were a good deal emaciated, and there were no decisive marks of peritoneal inflammation.

In two experiments on rabbits under the adult size, I cut off at least one quarter of the bladder at the fundus, with one stroke of the scissors; a ligature having been previously applied.

17. One of these rabbits died seven months afterwards, full grown, and not obviously cachetic, with one of the purulent sacks already described seated internally, immediately over the abdominal wound.

18. The second rabbit is alive still, and appears large, fat, and healthy.

Into the peritoneum of four rabbits I threw about an ounce of human urine, of a full yellow colour; left it there for an hour; then discharged it, and washed out the peritoneum thoroughly, by injecting tepid water. They all suffered much collapse from this experiment; and while the urine remained in the abdomen among the viscera, they dragged the hinder legs after them, as if slightly paralytic: the injection of the tepid water seemed to soothe them. Of these rabbits,

19. The first, a fat buck, never recovered from a state of collapse, and died in less than three hours after the experiment. The peritoneum exhibited no obvious marks of inflammation.

20. The second, also a fine fat buck, died in sixty hours, in part, at least, from peritoneal inflammation; there was purging. The inflammation seemed greatest nearest the wound.

21. The third, a rabbit under the full size, of spare habit, was destroyed in nineteen hours with the most diffused and active peritonitis I ever saw in this animal. In this last rabbit I found small crystals of urinary salt, scattered all over the peritoneum, from which the urine had been negligently washed out.

22. The fourth rabbit, also under the full size, recovered completely; and is now, twelve months after the experiment, large, fat, and to all appearance, perfectly well.

In seven experiments, I injected into the peritoneal-sack, eleven drachms of the *decoctum quercus*, *Pharmacopœia Londinensis*; the rabbits were under the full size and spare. Of these rabbits,

23. One died in fifteen hours, with purging; and, I think, a diffused peritonitis in the incipient state. The extractive of the bark was found lying in the peritoneum. The intestines were tympanitic.

24, 25, 26, 27, 28. Five others died, between twenty and thirty hours after the injection, apparently from the same cause:

29. And one got completely well.

In experiments 27, 28, 29, the decoction was of the full strength; in experiments 23, 25, 26, it was reduced to half strength; and in experiment 24, to a strength of one-third; it was therefore of the full strength in the rabbit that recovered. The rapidity with which death ensued in these experiments, deserves particular notice.

The peritonitic inflammation, which I have had repeated occasion to mention, in giving the results of these experiments, was marked, in the more decisive instances, by serous effusion; by the accumulation of adhesive matter; by the agglutination of the different viscera to each other, and the peritoneum; and, in some of the rabbits, by a thorough injection of the smaller vessels (on the large intestines especially) with blood, so that they exhibited a petechial appearance.

From the facts ascertained by the preceding experiments, the following inferences may, I think, be fairly drawn:—

1st. Large apertures into the peritoneum of the rabbit do not immediately induce a dangerous prostration of strength. In all my experiments, I never observed any marked collapse in the animal at the moment when the peritoneum was laid open, though I was in full expectation of it. When urine was injected, collapse was immediately and evidently produced.

2dly. Large apertures into the peritoneal sack, in the rabbit, are not necessarily, nor perhaps generally productive of fatal inflammation. Of eighteen rabbits not only opened, but subjected to further violence, five only died from this cause; (1, 2, 5, 6, 8;) the remainder, thirteen in number, (3, 4, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18,) either recovered, or were carried off by some other affection. As, in the eleven remaining experiments, a strong stimulus was applied to the peritoneum; these, of course, are excluded from the computation.

3dly. In the rabbit, the kidney, the spleen, and a large piece of the bladder, may be extirpated without necessarily causing death; though death under the first operation is probable. Of four rabbits, all died ultimately from the renal operation; two, however, not till one or two months afterwards. Of seven rabbits, five died (5, 6, 7, 8, 9) from the

splenic operation; and of the same number only three died (15, 16, 17) from the operations on the bladder.

4thly. When the abdomen is laid open, and parts are removed from it in the rabbit, the first danger arises apparently from collapse, (19); the second from general inflammation; (1, 2, 3, 6, 8, 20, 21, 23, 24, 25, 26, 27, 28); and the last from chronic topical disease, (4, 7, 19, 17.)

5thly. The rabbit's abdomen is very tender, probably no less so than that of man. Of twenty-nine rabbits, twenty-one died more or less directly from the operations performed, some of them, it must be confessed, violent ones; and it should be observed particularly, that five, out of seven rabbits, died from the splenic operation carefully performed; though both cases, hereafter recorded, in which the human spleen was removed, under circumstances to appearance highly unfavourable, terminated in complete and uninterrupted recovery. The general impression left on my mind by many observations is, that the abdomen of the rabbit is, on the whole, no less tender than the human.

6thly. It follows, from the former inference, that success in abdominal operations on the rabbit, furnishes a presumption in favour of success in similar operations on the human abdomen; and therefore, from these experiments, we may infer *presumptively* that moderate openings into the human peritoneum will not necessarily, or even generally, prove fatal from inflammation or otherwise; and, further, that certain viscera or parts of viscera, not essential to the welfare of our structure, may be removed from the belly without necessarily, or even generally, producing death. The extirpation of the kidney must be highly dangerous; but there is a presumption in favour of the successful removal of the spleen, the ovaries, or even of large pieces of the bladder. But to proceed to observations of the human body.

Of slighter injuries of the abdomen, it is unnecessary to make a large enumeration. Tapping, slight wounds, in which the intestines are not laid open, hernial operations with extirpation of small pieces of the omentum, and in Mr. Pott's case of both the ovaries, in general confessedly do well; and where death occurs, after the operation of hernia espe-

cially, it is sometimes rather referrible to some accidental concomitant, as delay, for example, than to any thing of necessity emanating from the nature of the operation itself.

Of severer injuries of the abdomen, with their results, the following may be adduced, as having, with few exceptions, fallen under my own notice, or that of my friends; and, as possessing an authenticity on which, where there is no observation to the contrary, I can thoroughly rely. These, as it will be perceived, so far as they furnish inferences at all, confirm those taken from experiments on the rabbit; and form, apparently, a part of one harmonious system of facts, which mutually support each other.

30.—1st. One case, the only one I know of, in which the mouth of the womb was torn off, and came completely away; large bleeding and collapse were produced, but the patient recovered. My friend, Mr. Scott of Norwich, carefully investigated this case, and Dr. Merriman of London is now, I believe, in possession of the preparation.

31.—2dly. One case, in which, from defective formation of the external genitals, the child's head could not readily pass: it forced its way into the rectum, and was born at the anus, occasioning three large rents, two laterally, and one forward; the woman recovered without any very pressing symptom. Mr. Harrison of Greenwich, had the woman ultimately under his care; and himself, in conjunction with my friend, Mr. Gaitskell, obliged me with the relation of it.

3dly. Four cases of chronic inversion of the womb, in which the uterus was extirpated by ligature, at different ages.

32. One, a case under the care of Mr. Chevalier. The woman, in this instance was, I think, about sixty; and for years previously had ceased to menstruate: no bad symptoms seem to have occurred.

33. The second, a case under the care of Mr. Newnham. The woman was about twenty-four. Some difficulties arose from the extreme irritability of the patient, but the greater part of the womb was got away. The preparation of the womb I saw myself. The woman is still doing well, and it is now six or seven years since the operation was performed.

34. The third, a case in which Mr. Windsor, assisted by Dr. Hull, of Manchester, operated. The patient was excessively irritable and intractable, and some difficulties occurred as in the former instance, but the operation succeeded. Dr. Hull himself related this case to me in a conversation between us.

35. The fourth, a case of my own, in which the greater part of the womb was removed by a wire ligature. It came away in eleven days. This patient was of a tranquil torpid habit; and not one bad symptom occurred.

36.—4thly. One case has fallen under my observation, in which a fall from the top of a coach occasioned a transverse rent through the abdominal coverings, above the abdominal rings, on the right side, four fingers broad at the least. The intestines hung out. The man recovered in a few weeks. The intestines still protrude at this part, pushing the abdominal coverings before them, and forming a ventral hernia. The scar of the rent is still apparent. The man was under the care of my friend, Mr. Green, of St. Thomas's Hospital.

5thly. Two cases may be mentioned, the only ones within my knowledge, in which the spleen was removed.

37. One that of the soldier whose side was laid open by a sabre wound at the battle of Dettingen, if my memory serve, the spleen protruding and lying out for some hours in the dirt. It was removed by the surgeon. The man recovered, and seemed to suffer afterwards no inconvenience referable to the want of the spleen. Mr. Cline used to relate this case.

38. A second, that recorded by Dr. O'Brien in his inaugural dissertation. The case was under his own personal care. The man was a native of Mexico: the spleen lay out for two days before the surgeon was applied to; the bleeding was profuse; the vessels and other connexions were secured by ligature, and the spleen separated completely from the body on the twentieth day of the wound. On the forty-fifth day the man was discharged from the hospital, cured; and observed to some one about this time, that "he felt as well as ever he did in his life." There was bloody urine till the tenth day, the only bad symptom which occurred during his reco-

very; the kidney having most probably received a wound at the time when the side was laid open.

5thly. Three cases may be cited, in which the dropsical ovary was rent, probably extensively, from external violence; these are all that have been brought under my notice, and all terminated favourably. For the full authenticity of the following I pledge myself:

39. An unmarried lady, with dropsical ovary, was thrown on the ground with violence, from a two-wheeled carriage, and struck the enlarged abdomen with considerable force against a stone which lay by the road side. A large discharge of urine followed; she became permanently freed from her dropsy; and marrying, died with a retroversion of the womb, which could not be replaced. On inspection, the remains of a ruptured ovarian cyst were discovered, retroverting the uterus, which was fixed firmly in the retroverted position by means of inflammatory adhesions.

This case, which may be relied on as authentic, gives additional probability to one related by the late Dr. Kissam, of New York, who was a fellow student of Mr. Gaitskell, at Edinburgh, and much esteemed for his activity and talent. In this, as in the former instance, the lady had an ovarian dropsy of many years standing, clearly distinguishable through the abdominal coverings. No abscess occurring, for several days afterwards, a trocar and canula were introduced into the peritoneal sack, and twenty-six pints of bloody serum were drawn off; the patient, notwithstanding the double injury from the rent and operation, getting well without any alarming symptoms.—*New England Journal of Medicine and Surgery*, vol. v. p. 225.

41. The third case deserves notice, especially as corroborated by the two former, which it resembles. There was swelling in the region of the right ovary, equable, smooth and without distinguishable fluctuation; pain shot occasionally in the course of the round ligament down the thigh; the left limb first, and afterwards the right, became œdematous; the general health was little impaired. When straining to reach something on a high shelf, the patient felt some part give way within her, and examining herself immediately afterwards, she

discovered that the circumscribed tumour had disappeared, and that there was general abdominal swelling in its place. For a length of time afterwards she seemed to be recovering from this injury, and died, with a schirrus of the uterine organs, and not, as appeared, from the accident.—*Idem*.

6thly, May be narrated, two cases, in which an opening was made into the abdomen, with a view of extirpating the dropsical ovary.

42. In the first, the operation failed completely. The woman had never been tapped; the ovary held about a pailful; a schirrous piece, as large at least as the hand, not easily removed, was left in the belly; great collapse occurred, directly the ovarian sack was drawn forth, before it was cut into; but the woman lived between eighty and ninety hours afterwards, without the occurrence of peritoneal inflammation, and died, apparently, from the cachexy produced by the dropsy, and for want of reaction in the system and the wound.

43. In the second case, the ovarian cyst was extirpated by Dr. Nathan Smith, formerly, I believe, of Connecticut.—(See *American Medical Recorder of Original Papers and Intelligence in Medicine and Surgery*, No. 17). The sack contained about eight pints; there were no adhesions of extent and importance; the natural connexion of the ovary was as large as a finger, and the patient got well without a bad symptom. Dr. Nathan Smith is well known to some gentlemen now in London, and would, I have little doubt, if this were deemed necessary for the sake of science, give proof convincing to the most sceptical, of the authenticity of this case. These are the only three operations that I at present know of, coming so immediately under my notice, as to justify citation; at the two first I was myself present. I question much, whether in the first operations of lithotomy and amputation, the proportion of recoveries was so great as one in two.

7thly. May be mentioned five cases of laceration in the womb or vagina, occurring during parturition, all of which were ultimately brought under my personal notice, though in one case only was I present when the accident occurred.

44. In the first, the child was born alive by the natural efforts, and the side of the womb was torn longitudinally, where

it unites with the broad ligaments; the woman sinking, of consequence, from flooding. I was requested to inspect the body; the rupture of the womb had not even been suspected during her life.

45. In the second case, the vagina, or neck of the womb, was lacerated behind, to the extent of a large hand breadth; the peritoneum being laid open, a clot of blood as big as the hand was found, after death, in the abdomen; collapse occurred, the patient never rallying thoroughly, though she lived for thirty-six hours.

46. The third case resembled the former; the woman died collapsed in about thirty-eight hours; there was, however, more re-action than in the former case.

47. In the fourth case the womb was torn in front, and the child escaped into the belly; the bladder was not injured. Collapse occurred in this case, and death took place in less than twelve hours.

48. The womb was torn in front in the fifth case also; the child as before escaping into the peritoneal sack. I brought this foetus away by turning; had my hand among the intestines and on the edge of the liver; felt the large arteries in the back of the abdomen, and grasped gently the empty and contracted womb. The child was brought away dead; the woman recovered pretty completely in the course of four or five weeks, but has never been in a state of robust health since. Her name was Casey; she lived near St. George's Church, Southwark; and before her recovery was complete, she came, for greater conveniency, into Guy's Hospital. A few months back, *i. e.* five or six years after the accident, I made a careful examination, when no traces of cicatrix were discoverable in the vagina, and the mouth of the womb felt perfectly sound and natural, so that there can, I think, be no doubt that the parts had been torn through above.

8thly. Every one knows the formidable nature of the Cæsarian operation, and the very unfavourable circumstances under which it has generally been performed in this country. By a friend of the late Dr. Haighton, however, it has been done three times; once successfully, when the abdominal wound was healed completely by the sixth day, and the woman was

able to stir about in her house on the thirteenth day ; the constitution was in this case sound, the contraction of the pelvis having been produced by a local cause, viz. fracture of the ossa innominata : the other two cases terminated fatally. Both the latter were performed on very unhealthy subjects ; and therefore was malacosteon. I have been induced to notice these three operations, because, from Mr. Barlow's acquaintance with my valued relative, they have been brought in a manner under my immediate notice.

Such is the small collection of facts, *favourable and unfavourable*, which, with limited opportunities, I have been able gradually to accumulate in the course of the last five or six years ; and which to me seem calculated to throw some additional light on the probable success of a more enlarged abdominal surgery. From these, few as they are, I feel conscious that no *certain* inference can yet be drawn, though *presumptive* inferences certainly may, and they seem to me to be the following :

1st. That smaller wounds of the peritoneum, as in tapping, hernia, &c. do not in general induce fatal peritonitis, or other destructive effects ; and, therefore, that the common opinion, not perhaps found on paper, but frequently urged in conversation, and apparently operative in practice, I mean, that inflammation in a spot of the peritoneum will almost invariably diffuse itself over the greater part of it, is probably unfounded in truth.

2dly. That extensive divisions of the peritoneum are certainly not of necessity fatal, whether by inflammation or otherwise ; and *probably* not generally so.

3dly. That the womb, spleen, and ovaries may be taken away in the mode mentioned, certainly without of necessity destroying life, and *presumptively* without generally destroying it.

4thly. That the womb, when developed from pregnancy, may be torn open ; that the child may escape into the peritoneal sack, among the viscera ; and that the mouth of the womb may be torn off, not indeed, so far as these cases may be relied on, without great danger, but twice, in seven instances, without death.

5thly. And generally, that the peritoneum and abdominal vis-

cera, though very tender in the human body, will, without fatal consequences, bear more injury, than, from their modes of practice, the British surgeons, especially, seem disposed to admit.

6thly. That all the above inferences, from observations on the human abdomen, are in unison with those drawn from observations on the rabbit, the one set of inferences mutually supporting the other; and in this we have a fact corroborative of the principle for which I have contended elsewhere, that observation on the brute and human subject, when made with caution, may, perhaps, be found more in correspondence with each other, than some surgeons are disposed, at present, to admit. A contrary opinion, so far as it is erroneous, must exert a very baleful influence upon the progress of surgery.

Whilst the body of facts which have reference to abdominal injuries remains so small, it would, no doubt, be the extreme of rashness, on such authority, to recommend to practice any operations as yet untried, or of rare performance, *unless indeed in those cases in which they secure the only remaining chance of life.* As, however, the facts related evidently create a suspicion, that a bolder abdominal surgery would not be unattended with success, I may be pardoned, perhaps, for endeavouring, on this occasion, to draw the notice of the profession to the following operations, all to appearance feasible, though by no means, all of equal promise; stating distinctly, at the same time, that my design at present, is to recommend them to *consideration* merely, and not to *practice*, except as observed above, *in cases otherwise desperate.*

1st. *A division of both the fallopian tubes, and even the removal of a small piece of them, so as to render them completely impervious, a fit addition, apparently, to the Cæsarian operation, the danger of which it would scarcely increase.*—The effect of this operation would be to prevent subsequent impregnation, without, however, destroying the sexual propensities, or the menstrual action of the womb; and as many, besides Mr. Barlow's patient, have, on the Continent, recovered from the Cæsarian operation, the possibility of a second need for it should, I think, by all means be precluded. In those cases, also of contracted pelvis, in which, notwithstanding the excitement of parturition in the seventh month, it is still necessary to de-

stroy the children, by opening the head, and reducing their size, in order to bring them down through the pelvis, I think it would not be amiss to adopt this operation in order to produce sterility. An opening, two fingers broad, might be made above the symphysis pubis, near the linea alba; the fallopian tubes might be drawn up to this opening one after the other, and a piece of the tube might then be taken out. This operation, much less dangerous than a delivery by perforating the head when the pelvis is highly contracted, may, I think, be safely recommended.

2dly. *The extirpation of the healthy ovaries.*—This operation, even granting it to be safe, can scarcely in any instance be necessary, though it may be observed, by the way, that it would probably be found an effectual remedy in the worst cases of dysmenorrhœa, and in bleeding from monthly determination of the inverted womb, where the extirpation of this organ was rejected.

3dly. *The extirpation of the ovarian cyst in schirrus, combined with dropsy, or in simple dropsy,* will most probably be prevented by extensive adhesions, if the dropsical cyst be large and of long standing; but if the cyst be small, containing (as in Nathan Smith's case), a few pints only, the adhesions, it may be, will be found of small extent and easily separable. It remains to be ascertained, *by observation*, in what degree the abdominal adhesions may be divided, without an unjustifiable risk to the life of the patient. In the case of Janet Ireland, operated on by a very able surgeon, Mr. Lizars, of Edinburgh, the whole of the diseased mass could not, I believe, be removed from the abdomen, notwithstanding the patient got well, gathered flesh, and was relieved of her central pains. These considerations are very encouraging, but we must *beware of rashness*, and above all, we must be careful to select for the operation, those cases only, in which there is a reasonable hope.

4thly. *The removal of a large circular piece of cyst in ovarian dropsy, when the sack itself cannot be extirpated.*—As rupture of the ovary has cured the disease apparently, by laying the cyst open, and, perhaps, by inducing inflammation, advantage might be expected from this operation, at least as a palliative, though other cysts would no doubt, in many instances, gradually renew the disease.

5thly. *The removal of the cancerous womb, when the ulceration first makes its appearance.*—To omit the operations performed upon the Continent, as well as those by Dr. Weatherell and Mr. Banner, the event of Mrs. Moulden's case hereafter detailed, has, it is presumed, clearly proved the possible success of this operation. Without the help of surgery this disease appears to be totally helpless; but of rashness, as before observed, it is necessary to beware.

6thly. *Extirpation of the puerperal uterus.*—When the Cæsarian operation is performed, or when a patient is evidently sinking after rupture of the womb, let it be remembered, that the wound formed by the extirpation of the womb, and which might, probably, be much reduced in extent by drawing the parts together with a ligature, would merely take place of a more formidable wound, that, I mean, formed in the womb by the Cæsarian operation, and which, by the operation here performed, would, together with the uterus, be taken completely out of the body. No operation, perhaps, can be more unpromising, shall I say, more unjustifiable, *in the present state of our knowledge*, but I thought it proper to mention it.

From four rabbits, I removed the uterus, within a few hours after delivery, after having drawn together, by means of ligatures, the parts by which they were connected to the pelvis; I mean the vagina, broad ligaments, and fallopian tubes. The mass removed was large enough to fill the hollow of the hand, as the rabbit is multiparous and has two wombs of great capacity. Of these four rabbits, three, to my great surprise, recovered; the fourth dying from internal hæmorrhagy, in consequence of the detachment of the ligatures, which had been insecurely tied. A practitioner of considerable acuteness, Mr. Webber, of Yarmouth, informs me, that being called to an inversion of the puerperal uterus, he successfully removed it on the fifteenth day after delivery.

7thly. Should the bladder give way into the peritoneal sack, and I have two preparations of this accident, why should we not lay open the abdomen, tie up the bladder, discharge the urine, and wash out the peritoneum thoroughly by the injection of warm water? This operation would secure a chance of life, if the urine had not been extravasated long, say above half an hour.

8thly. Small openings, with callous edges, through the neck of the bladder into the vagina, are cured in France, (as I learn from Mr. Travers) by the actual cautery. When the opening is large it might perhaps, in some cases, be closed by ligature. Mr. Preston, an esteemed pupil, first suggested to me this operation.

9thly. Should circumstances require the high operation of the stone for the removal of calculus, might it not, in some cases be useful to tie up the opening, formed in front of the bladder, the end of the ligature being drawn forth through the abdominal wound. Having little experience of lithotomy, I feel myself incapable of judging here, but my persuasion is, that in some rare cases, the bladder might be speedily healed in this manner as in experiments 17, 18.

10thly. In the rabbit I have often tied the abdominal artery, and then carried the ligature out of the abdomen, at the point where the artery lay, by means of a broad pointed needle, instead of drawing the thread forth at the wound. In operating on the human body, would this expedient be advantageous, should further experience lead us to wish the ligature in all cases removed? I have, once or twice, weeks after operating, found the remains of a ligature which had been cut short, lying in the middle of a sack of puriform matter, and to appearance laying the foundation of chronic disease.

P. S. Since the substance of the preceding pages was written, Dr. Ritzins, one of the supernumerary physicians to his Majesty the king of Sweden, has been in London, and has informed me, that the complete removal of the cancerous womb has been, to his personal knowledge, performed on the continent five times. All the patients recovered from the operation; four of them, he said, were doing well several months afterwards, and one died, not, apparently, in consequence of the injury inflicted by the operation, but, as was supposed, from the further progress of the disease in the surrounding parts contiguous to the uterus. The womb was removed through the outlet of the pelvis. There was no hæmorrhage requiring a ligature. Dr. Ritzins designs to publish these cases.

FIRST CASE OF ENTIRE EXTIRPATION OF THE UTERUS.

Mrs. A. B. *Æt.* 33, the mother of six children, the last born seven years ago, of constitution naturally healthy, came under my observation, reduced by malignant disorganization of the neck and mouth of the uterus and upper part of the vagina. There was ulceration, flooding, copious watery and offensive discharge, the constitution was giving way, and it seemed probable life would not be protracted beyond one or two months. Assisted by Mr. Callaway and Mr. Martin of Hingham, I extirpated the uterus, together with the diseased portion of the vagina, the woman living for thirty-nine hours afterwards, but never thoroughly rallying. She expressed herself highly gratified with the relief of her central pains, but the skin remained clammy, the pulse ranged between 135 and 145 in the minute, small and weak, and there was a continual feeling of debility, mixed with that kind of composure which is so often observed, at the fatal close of puerperal fever. Though no ligatures were applied only six or eight ounces of blood were lost during the operation. The womb was as large as a goose's egg, all parties were candidly informed of the great danger of the operation before it was undertaken, and the patient herself was anxious that it should be attempted, as she felt without other hope. From examination after death it appears, that the diseased mass was entirely removed, without any injury to the intestines, bladder, ureter or urethra: Mr. Green and Mr. Callaway very carefully inspected the body. The bladder was fallen into the chasm, formed by the removal of the uterus, so that it lay upon the front of the rectum, and closed the head of the vagina. In the cavity of the pelvis there were two or three ounces of bloody serum, which might have been easily discharged by passing the finger between the bladder and rectum: the formation of adhesions was begun.

SECOND CASE.

Mrs. Moulden, aged 50, of grey eyes, tranquil disposition, broad in her make, and disposed to obesity, was seized with

offensive discharge from the vagina, soon followed by eruptions of blood in large quantity; so that, according to her own report, frequent faintings were produced, and the blood occasionally sank through a bed about twice as thick as a sofa-cushion, collecting on the floor; and day after day, for months together, with little intermission, one or two pints of blood were discharged.

Although Mrs. M. in her general conversation, is by no means prone to hyperbole, it seems evident that she must have greatly over-rated the quantity of these daily floodings. Certain, however, it is, from her repeated and considerate declarations, that very large quantities of blood were lost during a period of many months; and though, with the exception of some small œdema of the legs, there were no signs of general dropsy, the paleness, coldness, and weakness, and the frequent attacks of faintness, or complete delirium, showed pretty clearly that much vascular inanition had been produced. In other particulars, the patient's condition was not altogether discouraging; for the bowels were regular, and the appetite was occasionally good; and the appearance, though cachectic, and perfectly similar to that of other women perishing under malignant ulceration of the uterus, was not such as to indicate a constitution wholly unfit for surgical operation.

The woman having been under the care of three or four different practitioners before I saw her, I deemed it proper to examine immediately with great attention; when I found that the womb was moveable, and about as large as a goose's egg—that its mouth was broad, open, and of cartilaginous hardness—that it manifested the usual marks of malignant disorganization, in which also about one-fourth of the contiguous vagina was involved; and, further, that on the surface of the diseased mass was formed an ulcer, about as broad as a shilling. The adjacent structures appeared to be healthy enough—the bladder and rectum were sound, the inguinal glands were not enlarged, whence it was presumed that the lumbar were perhaps healthy; the ovaries could not be felt to exceed their ordinary bulk, and there evidently was no tangible enlargement of the liver, spleen, kidneys, or omentum, all of

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which were examined with the nicest care. The breathing was easy; the pulse various in its frequency, ranged between 115 and 120 in the minute; and the patient, though certainly very much debilitated, had sufficient remains of strength to walk to my house (the distance of a furlong), though not without considerable difficulty. To be short—it seemed clear at this time, that the case was ulcerated carcinoma of the uterus, as it is called, and that extirpation was the only remaining remedy.

The bowels having been cleared, and the patient being resolved to submit to the operation, on the 19th of February, 1828, I determined to remove the diseased parts without further delay. For this purpose, having placed the woman in the obstetric position usual in this country (on the left side I mean), close upon the edge of the bed, with the loins posteriorly, the shoulders advanced, the knees and bosom mutually approximated, and the abdomen directed a little downwards towards the bed, I began the operation.

First Stage of the Operation.—I commenced by passing the index and second finger of the left hand to the line of union between the indurated and healthy portions of the vagina; the finger being converted into a cutting instrument (varying with the exigencies of the operation), by means of a moveable knife, which requires a word or two of description. The blade of this knife, not unlike that of a dissecting scalpel, was mounted upon a long slender shank, which, including its large handle, was about eleven inches in length; and with this stem the blade was united, so that its flat, or plane, formed with the stem an angle of fifteen or twenty degrees. The first and second fingers of the left hand then being in the vagina contiguous to the diseased mass (as before observed), by taking the stem-knife in my right hand, I could at pleasure lay the flat of the blade upon the front of these fingers, and urge the point of the instrument a little beyond the tip. The apex of the fore-finger being in this manner converted into a cutting point, by little and little I gradually worked my way through the back of the vagina, toward the front of the rectum, so as to enter the recto-vaginal portion of the peritoneal cavity, frequently with-

drawing the stem-scalpel, so as to place the point within the tip of the finger, and then making examination with great nicety, in order to ascertain whether the vagina was completely perforated, minute care being necessary in this part of the operation to avoid wounding the front of the intestine.

Second Stage of the Operation.—A small aperture having been formed in this manner, in the back of the vagina, through this opening the first joint of the fore-finger was passed, so as to enlarge it a little by dilatation and slight laceration (safer than incision). This done, and a cutting edge being communicated to the finger, by placing the plane of the blade in such a manner that its incisory edge lay slightly advanced beyond the side of the finger now lying in the aperture, after drawing the point of the instrument within the tip of the finger, which operated as a guard, I proceeded to make an incision through the vagina transversely, that is, in a direction from hip to hip; for this purpose carrying the finger with its cutting edge, from the opening in the vagina already made, to the root of the broad ligament on the left side, so as to make one large aperture. I then took a second stem-scalpel, formed on the same model as the preceding, with this difference that the incisory edge lay on the other side of the blade; and laying this instrument on the fore-finger as before—in such a manner, however, that the cutting edge lay forth on the other side of the finger (to the right of the pelvis, I mean).—I carried the finger thus armed from the middle of the vagina, where the former incision commenced, to the root of the broad ligament on the right side; so that, at the end of this, which was the second step of the operation, the diseased and healthy portions of the vagina behind became completely detached from each other, by a transverse incision, which stretched across the vagina, between the roots of the broad ligaments immediately below the diseased parts. At this time the intestines could be felt hanging about the tips of the fingers; but the blade of the scalpel lying on the finger, in which it was as it were imbedded, the risk of a wound, whether by point or edge, was completely prevented.

Third Stage of the Operation.—The back of the vagina, then, having been divided in this manner, I urged the whole of the left hand, not of large size, into the vaginal cavity—and the more easily because the woman had borne children; afterwards passing the first and second fingers through the transverse opening along the back of the uterus—this viscus lying, as usual, near the brim of the pelvis, with its mouth backward, its fundus forward, and a little elevated just above the symphysis pubis. This manœuvre premised, under full protection of these fingers, now lying between the womb and the intestine, taking a double hook, mounted on a stem eleven inches long, I passed it into the abdominal cavity, through the transverse aperture, along the surface of the fingers already mentioned; and laying it in front of them, near their tips, I converted these fingers into a sort of sentient tenaculum, which, with little pain to the patient, I pushed into the back of the womb, near the fundus, and then drawing the womb downward and backwards towards the point of the os coccygis, as I carried the fingers upward and forward, I succeeded ultimately in placing the tips over the fundus, in the manner of a blunt hook; after which, by a movement of retroversion, the womb was very speedily brought downwards and backwards into the palm of the left hand, then lodging in the vagina; when, at this part of the operation, the diseased mass might be seen distinctly enough, lying just within the genital fissure.

Fourth Stage of the Operation.—The process of removal being brought to this point, the diseased structure still in the palm of my hand, remained in connexion with the sides of the pelvis, by means of the fallopian tubes and broad ligaments, and with the bladder by means of the peritoneum, the front of the vagina and interposed cellular web, parts which were easily divided so as to liberate the mass to be removed. The broad ligaments were cut through, close upon the sides of the uterus; and, in dividing the vagina, great care was taken to keep clear of the bladder and uterus. The professional friends who favoured me with their presence were, Dr. Elliotson, Mr. Callaway, Mr. B. Cooper, Mr. Key, and Mr. Morgan. The operation was facilitated by previous child-bearing.

although, notwithstanding the discharges, there was little tendency to prolapsus uteri. Though the womb had bled so freely before the operation, owing to the weakness of the circulation and other causes, yet not more than four or five ounces of blood were effused during its progress, the greater part coming away when the diseased structure was detached from the bladder and vagina in front. The pain was not greater than that of an instrumental delivery, nor perhaps so great, nor did the patient require to be at all confined. The principal suffering was experienced when the vagina was divided behind, and when it was dilated by the introduction of the hand. There was no decided collapse when the peritonæum was first laid open, the intestines approached the aperture, but did not protrude; after the operation the sides of the vagina collapsed, and the aperture above seemed to be covered by a retroversion of the bladder. An indurated portion of the left side of the vagina, as large as the first joint of the little finger, was separately detached by the knife after the completion of the rest of the operation. The pulse was distinct enough in the wrist during the greater part of the time; but when the diseased portions had been completely removed, on the occurrence of the hæmorrhage before mentioned, the beat of the radial artery was lost for about five minutes, the respiration being very feeble, and the patient lying, as after large floodings, very quiet. When brought to greater perfection, the method of operation will probably not occupy many minutes; but in this instance, that it might be done more safely, it was performed very slowly, and, like some deliveries by the forceps, it required more than an hour for its completion. It was not necessary in this case to vary the posture, the horizontal position being maintained throughout. The first incision was made at four o'clock, and the extirpation was finished by a quarter past five. Two ounces of gin and water were given during the operation, and the same quantity after its termination, with sixty drops of the tincture of opium. Previously to the operation the pulse was 120, tongue clean and rather white, and her manner composed; during its continuance, and when at the height of agitation, it arose to 140 in the minute, when she became

faint, and approached nearly to a state of asphyxia. Two hours subsequently to the operation she was lying comfortably as if asleep, the whole body was warm, the pulse ninety-two, and distinct, and the manner and countenance encouraging. On the third day there was great agitation and vomiting, and the pulse 112, without any obvious cause. Considerable solicitude was now entertained respecting her; but, happily, every uncomfortable symptom disappeared when the bowels were freely relieved. For ten days there was a redish-brown discharge, and then for eight or nine days more it assumed a muco-purulent character, the flow from the vagina ceasing in a great measure on the nineteenth, and altogether on the twenty-first day. Shooting pain was more or less felt during the three first weeks after the removal of the uterus, on the left side, especially where the crural nerve is crossing the brim of the pelvis, under Poupart's ligament. It is now five months since the parts were extirpated, and the patient is fat and well, and designs to return to her husband. The interception of the access to the ovaries is a complete security against extra-uterine impregnation. The head of the vagina is closed by the bladder which lies upon it. In future cases, it will, most probably, be necessary to vary the method of operating according to circumstances, nor is the operation here given proposed to the profession as the best. That its principal parts should be rendered visible is much to be desired, nor do I conceive this to be impracticable. Let us remember what has been done for lithotomy, amputation and the operation for aneurism.

THIRD CASE.

Mrs. — æt. 40, of dark complexion, spare make, and the mother of several children, was labouring under scirrhusity and thickening of the neck of the uterus and about a quarter of the vagina above, with some ulceration, and feeling herself in a state of rapid decay, she was, together with her friends, after the failure of other means, anxious that the operation should be tried.

The vagina was lax and the uterus moveable. The dangers and the uncertainties inseparable from the removal of the

uterus, in the present state of abdominal surgery, were candidly laid before all parties concerned. Mr. Green of St. Thomas's Hospital, and Mr. Morgan of Guy's Hospital, considering that the constitution was not unfavourable for an operation of this kind, the patient still persevering in her wish; the parts consisting of the whole of the womb, and the upper part of the vagina were removed. When the sides of the vagina and the broad ligaments were cut through, the principal hæmorrhage occurred, amounting perhaps to nine or ten ounces of venous blood. When the uterus was drawn down, the principal pain and collapse were produced. After the operation, the pulse became for a few minutes imperceptible at the wrist, afterwards gradually returning and ranging between 125 and 130 in the minute, with occasional, though not frequent intermissions. Large doses of the tinct. opii were given, and the patient lay, for the most part composed, with occasional slumbers: now and then tendency to restlessness was observed, although a complete rally could not be obtained. From the time of the removal of the parts, the patient went on sinking, and died at the end of about nine hours, without scarcely a struggle. An examination instituted next day, by Mr. Green and Mr. Morgan proved, that the intestines, bladder, and ureters remained uninjured. Some two or three ounces of clotted blood were found in the cavity of the pelvis, in a situation admitting of easy removal through the outlet. The womb was twice as large as in Mrs. Moulden's case, and the vessels, as appeared from examination of the womb itself and of the parts within the pelvis, from which it had been separated, were of considerable size, especially the veins. Death here seemed to be produced partly by the loss of blood, but mainly by the shock of the operation.

SOME REMARKS

ON THE

OPERATION OF TRANSFUSION.

It is said that Andreas Libavius, in 1615, first proposed the operation of transfusion, and that about 1658, in consequence of the acknowledgment of Harvey's doctrines respecting the circulation of the blood, the first attempts were made to transfuse blood into the veins of diseased persons, their tainted blood being previously removed. Marvellous are the effects said to have been produced by transfusing the blood of healthy young animals into the veins of old or diseased ones. Hence the prevalence of the opinion, that this was the mode of curing all diseases, and even of immortalising man. Denys, a physician, and Emene, a surgeon, of Paris, ventured to transfuse the blood of a calf into the veins of an idiot; but the mixture induced furious madness, and the consequence of this and other unsuccessful results, transfusion was forbidden. Since this period it has been neglected, having been considered either useless or dangerous.

In common with many of my most intelligent friends, I have long entertained an opinion, that notwithstanding the improvements which have been already made in surgery, there are still many operations of importance which may be added to the science. Among these operations, transfusion may, I think, fairly rank as one; and it is with a view of keeping this valuable operation before the profession, and in the hope of adding somewhat to the body of facts by which it may be still further illustrated, that I am induced again to make it the subject of a memoir.

Without pretending to give an enumeration of all the cases in which transfusion may be tried, with a fair prospect of advantage, I may observe, that there are some cases, in which the practical utility of it is both great and obvious.

1. I remember being called once to a poor woman in my neighbourhood, who had lost a large quantity of blood after her placenta had been taken away. When I saw her, the hemorrhagy was stopped, but she was evidently sinking; and, notwithstanding the assiduous use of all the ordinary remedies, she died in the course of two hours after the first eruption of the blood.

2. By a friend of mine on the other side of the water, I was requested some two or three years ago, to give advice in a case very similar to this. The blood came away from the womb, during, and after the birth of the placenta; and the patient died in the course of three or four hours afterwards, throughout the greater part of which time she was obviously sinking, notwithstanding the ordinary remedies were actively tried.

3. A poor fellow, in one of our hospitals, lost a great quantity of blood in consequence of an injury of the leg; but, although it was pretty evident that death must ensue, he continued to breathe afterwards for two or three hours.

Now, in cases of this kind (and I might enumerate others which have fallen under my personal notice), when the patient is gradually sinking, and the bleeding is suspended, there is a fit opportunity for trying the operation of transfusion; and, unless we are prepared, in the face of opposing facts, to deny the utility of the operation altogether, it must, I think, be admitted that it would be used in such emergencies, with the fairest prospect of preserving the patient's life.

It is not, however, in conjunctures of this kind only that the operation deserves consideration: there are other cases in which transfusion should not be lost sight of, although its utility in them is certainly much more dubious.

We know that in hanging or submersion, death, at first, is apparent only, and not real; for a certain period after respiration stops, resuscitation is still possible. Now, that death from bleeding may also for a time be apparent, is by no means

unlikely ; and it is not impossible, therefore, that transfusion may be of service, if performed within a given period, even after the breathing has been stopped. Under this impression it was that I instituted the following experiments ; and although the results have not corresponded with my wishes ; and although too they do not by any means form a complete body of information on the point, with a view of making an opening in the subject, I am induced to record them.

Their results, the experiments we shall not transcribe, afford a variety of inferences which, although they do not lead us to expect much from transfusion, when the asphyxia of hemorrhagy has been produced, are sufficient, I think, to bear as out in the assertion, that in cases of this kind, in which there is no other hope, the operation may deserve consideration ; and we may infer,

1st. That the time which intervenes between the opening of an artery, and the attack of apparent death, varies exceedingly in different individuals, even when the artery remains unclosed, and the bleeding therefore is not obstructed. In some of these dogs it was about two minutes, (8) and in one twenty (9).

2dly. That after the cessation of respiration, and the relaxation of the abdominal muscles in the dog, the animal very speedily becomes irrecoverable by the process of transfusion ; for it will be observed, that when the dog was suffered to be in a state of apparent death for sixty-four, (4) thirty-four, (5) twenty, (7) nay, even ten minutes, (6), it could not be resuscitated ; and this, too, although in experiments 7, 8, the operation of transfusion was assisted by the stimulus of the hot bath, and an artificial respiration very diligently executed. Whether this principle may or may not be transferred to the human body, admits a doubt ; but the affirmative is probable.

3dly. That one impediment to the resuscitation of the animal in these cases, arises, perhaps, from the coagulation of the blood in the heart, for concretions were found there on inspection in Experiment 7 ; it should be added, however, that this was ascertained to be the case, by inspection, in one of the dogs only, for the others were not examined ; and that in other animals, as, for example, the ox, the blood has been found by an excellent experimental observer, Mr. Thackrah, to be fluid in the

heart, half an hour after the animal has been knocked down : nor must it be forgotten, that the blood of the dog has a much stronger tendency to speedy coagulation than the human blood. We must not, therefore, lightly make this inference general, nor transfer it without consideration to the human body.

4thly. That although the dog cannot, perhaps, in general, be resuscitated, even a few minutes after the carotid artery has been fairly laid open, and distended by the introduction of a pipe ; and although resuscitation be improbable, if respiration has been suspended in consequence of bleeding, yet, now and then, recovery is possible ; since, in Experiment 9, a complete resuscitation was accomplished, about twenty-five minutes after the artery had been opened, and four or five minutes after the animal had lain to appearance dead. And here it may be observed, transiently, how necessary it is not to draw conclusions hastily from a few experiments, but, on the contrary, to multiply them as much as may be, since it is by performing the same experiments repeatedly that important exceptions are sometimes ascertained.

5thly. It follows from the preceding inferences,* that if we are called to a patient fifteen or twenty minutes after the carotid artery has been laid open, the patient may be still respiring ; and therefore, that resuscitation, by means of transfusion, may not perhaps be found in every instance impracticable. If the eighth pair of nerves were divided only, the recovery might be permanent ; and if it were cut through on both sides, the patient might be expected to live afterwards for a few hours.

6thly. In some of these experiments, in which the carotid was laid wide open, the blood, towards the close of the operation, came away sluggishly, and in small quantities ; so that the discharge might have been arrested by the mere pressure of the finger. When persons cut their throat, I strongly suspect, that by the pressure of the finger, or, by putting a fold or two of a handkerchief into the wound, the flow of the blood might sometimes be so obstructed as to prolong the patient's life till further assistance could be obtained. If this assertion be true, it cannot be made too generally known.

7thly. The preceding experiments do not enable me to decide whether, in apparent death from bleeding, a preference should be given to the injection of blood into the jugular vein or the carotid artery ; but, I think, on the whole, the blood ought to be injected into the carotid artery, toward the heart, in order, if possible, to renew the circulation through the coronary vessels, on which, I suspect, the irritability of the heart depends. But to proceed. The formation of blood is the principal end of the chylopoietic viscera, and of their auxiliaries ; and it seems, therefore, not improbable, in those cases in which the action of these viscera is interrupted by a scirrhus of the pylorus, or other causes, that their operations might be superseded by the injection of blood into the veins, so as to supply the vessels in a direct manner with that blood, which in health is the result of sanguification. As, however, opinions derived from reasonings of this kind are exceedingly uncertain, until they are brought to the test of experience, I have been induced to institute an experiment, not unattended with labour, with a view of demonstrating that dogs certainly may be supported for a length of time by the transfusion of blood only, without the aid of food taken into the alimentary tube ; and that the following is a brief statement of the results :

1st. That the dog may be nourished a length of time, without the help of food, by transfusing into the veins the blood of another individual of the same species, either by the tube or the syringe.

2dly. That the blood which is supplied to the vessels in this manner does not support the body so effectually as an equal quantity would do, if derived from sanguification.

3dly. That the health is liable to be much impaired, by operations of this sort ; and that enlargement of the heart, the spleen, and the liver, may be produced by them in the course of three weeks.

4thly. That these effects, it is probable, in the present state of our knowledge, are not inevitable, nor of equal degree in all cases ; but are rather to be attributed to the circumstances of the operation than the nature of the operation itself.

5thly. Whether these principles may be transferred from the dog to our own species, is at present uncertain ; but till we

have proof to the contrary, they furnish a strong presumption, that the human body may be nourished by the injection of blood.

In the progress of knowledge and the decay of prejudice, should the method of nourishing by transfusion be practised hereafter on the human subject, I suspect it will be found, that small quantities of blood are sufficient to support the body in a state of languid life; and that ill health is not inseparable from the operation, provided it be performed in a dexterous and judicious manner, and provided, especially, the blood be injected frequently, in small quantities at once.

But to conclude this part of my paper. There are perhaps various cases, in which blood may be transfused with advantage, but three more especially deserve consideration:—those, I mean, in which the patient is dying for want of nourishment; those in which the patient is already dead, to appearance, in consequence of copious bleeding; and those cases, lastly, in which the breathing still continues, although it is pretty evident, from the course of symptoms, that death must ensue in consequence of the loss of blood which has been sustained. These cases, under the present modes of management, are all of them desperate.

OF THE KINDS OF BLOOD PROPER FOR THE OPERATION OF TRANSFUSION WHEN PERFORMED ON THE HUMAN BODY.

When the blood of one genus of animals is added, in small quantities, to that of another genus by transfusion, we have reason to believe (in the present state of our knowledge), that no dangerous consequences will ensue; and I have heard Dr. Haighton assert, that after taking a few ounces of blood from the dog, he has afterwards transfused that of the sheep in its place, without producing dangerous symptoms. Now, if further experiments, multiplied and varied, should thoroughly confirm this principle, we may hope to find hereafter, that the blood of animals may be safely thrown into the human vessels

in small quantities daily, for the purposes of nourishment, instead of the human blood, which it must be more difficult to procure.

Although, however, the blood of one genus of animals may, perhaps, without fatal consequences, be sparingly mixed with large quantities of the blood of another genus, all the facts, which have hitherto come to my knowledge, go to prove, that if an animal be drained of the blood in its larger vessels, and replenished with large quantities of blood derived indifferently from another genus, great danger, and in general death itself will ensue.

The experiments performed, with a view to establish the point, acquire additional strength, when associated with others instituted by Dr. Leacock, of Barbadoes, a few months before ; experiments to which I am wholly indebted for my first notions on this point. From these it appears, that if a dog be drained of its blood until apparent death be produced, it may, indeed, be revived for a time, and very completely too, by replenishing it from the sheep, but it generally dies in a few days afterwards.

Connected with my own, these experiments of Dr. Leacock possess a peculiar interest, for though they harmonize with them in the general result, they differ from them materially in the circumstances. It was arterial and not venous blood ; the blood of the sheep and not the human, that was substituted ; and it deserves particular remark, that in Leacock's experiments, the transfusion was not performed by the syringe, a method of operating with which he was unacquainted, but simply by the tube.

From these facts it appears clearly that the human blood cannot be safely substituted in large quantities for that of the dog. It is certain that death was not produced accidentally, from the hurry of injection, or from plethora ; from suffering the blood to accumulate in the cup of the syringe, or the dog to remain too long in a state of asphyxia, for in some of the experiments, these accidents were carefully obviated, particularly in the last.

16. The only experiments that I know of, in which the human blood was substituted for that of the dog, by an opera-

tion similar to those described above, without destroying the animal, are those performed, six or seven years ago, by Mr. Goodridge, of Barbadoes, a gentleman who was at that time finishing his medical studies, at the united hospitals. In these experiments, probably in consequence of the natural vigour of its constitution, and, perhaps, from the smaller quantity in which blood was injected, the animal was enabled to struggle through the consequences of the operation; but even in these cases, for some hours after the transfusion, a variety of unfavourable symptoms occurred.

As it is clear, from the preceding experiments, that the blood of one sort of animals cannot, with impunity, be substituted indifferently, and in large quantities, for that of another sort of animals; it follows, of course, that in performing the operation of transfusion on the human body, the human blood should alone be employed, at least until we have discovered some other kind of blood as well suited to the vessels as that which they naturally contain.

Provided the blood transfused be derived from an animal of the same species with that which receives, it seems to matter but little whether that blood be arterial or venous. In most of those experiments in which, after draining the dog of its own blood, I resuscitated the animal, and preserved its life, by supplying it with blood taken from the vessels of another dog, arterial blood was injected, in preference to the venous, because a full supply of this kind of blood might be more easily obtained. To satisfy myself, however, that venous blood possesses the resuscitating power, as well as the arterial, I performed some experiments, and from them we may, I think venture to presume, until we have proof to the contrary,

1st. That, in transfusion, venous blood may be successfully used, although, perhaps, arterial blood is preferable.

2dly. That an animal may be saved from the death of hemorrhagy, by the transfusion of a much smaller quantity of blood than that which it has lost.

3dly. That the blood of one genus of animals cannot be indifferently substituted, in large quantities, with impunity, for that of another genus; and, therefore, that if an operation

be performed upon the human body, human blood only should be employed, until some other blood be found which is equally congenial to the vessels.

To these inferences may be added the following remarks. It seems not improbable that animals of one genus possess the power of assimilating to their own the blood of another genus, provided they live for days after it has been infused into their veins; as it is not easy to conceive how life can continue for a length of time afterwards, (Experiment 16,) unless such assimilation be accomplished.

Although the blood of one genus of animals cannot be injected largely into the vessels of another genus, without danger to life, it is not unlikely that small injections of this kind may be safely tried. The importance of this principle, in the operation of nourishment by transfusion, is obvious.

Although an animal may be resuscitated by the transfusion of venous blood, I suspect that, of the two varieties, the arterial blood is the most efficacious; but into this enquiry I forbear to enter further at present.

It is clear, from these facts and inferences, that although the blood of the mammalia may be essentially the same in all the genera, the different kinds of blood differ very importantly from each other. It is an interesting, and, perhaps, a difficult enquiry, Whether any genus of animals be furnished with a kind of blood congenial to the human veins? That of the horse is the most promising.

Blood may be received into a cup, and passed through a syringe, without being thereby rendered unfit for the purposes of life.

In performing transfusion there can, I conceive, be no doubt that blood ought to be transmitted by the tubule merely when this method is practicable; but as we should probably meet with obstructions in operating in this way on the human body, I have been led to make experiments with a view of ascertaining whether blood may not be absorbed and propelled by means of a syringe, without becoming unfit for the purposes of life; for transfusion may easily be performed in this manner:—

The following are the inferences drawn.

1st. That blood, although it have passed through the syringe, and repeatedly, is still capable of supporting the life and health of the body. With one exception, all the dogs on which these operations were performed, eleven in number, recovered, and some of them got completely well within two or three days afterwards.

2dly. That although blood which has passed the syringe retain its fitness for the animal purpose, it probably becomes deteriorated by this operation, especially if it lie for a few seconds out of the vessels, and be slightly inspissated in consequence. In exp. 22, 23, 24, 25, 28, 29, the dogs suffered but little, but in exp. 20, 21, 26, 27, dangerous symptoms were produced. How long the blood may lie out of the vessels without becoming wholly unfit for the vital purposes, has not been ascertained, though the principle is well worth investigation.

3dly. That the deteriorated blood, after it has been thrown into the vessels, undergoes a sanative process, by which it again becomes thoroughly congenial to the functions of the animal; for it will be observed, that most of the dogs, though languid for some two or three days subsequently to the operation, became very lively and well a few days afterwards.

4thly. And probably that dogs of tender constitution suffer more from operations of this kind than those which are more hardy; other circumstances being the same. This plain, but important principle, must be borne in mind when we think of transferring these conclusions from the dog to the human subject. The preceding principles certainly hold good in the pathology of the dog, but whether they hold true also in human pathology must be ascertained by future observation; the affirmative is in a high degree probable.

OF TRANSFUSION FROM THE ARTERIES OF ONE MAN TO THE VEINS OF ANOTHER.

In general, there must, I am aware, be considerable difficulty in obtaining arterial blood from the human body for the purposes of transfusion; but persons may be induced occa-

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sionally, sometimes from motives of affection and sometimes for hire, to submit to the opening of an artery.

If blood is to be transferred from the arteries of one man into the veins of another, it would be necessary, in the first place, to lay bare a vein on the fore-arm of the patient to the extent of an inch or more, and then to bind a ligature between the hand and the intended opening, in order to prevent the escape of the blood when the circulation is renewed; after which an opening should be made with a lancet longitudinally, (in the course of the vein I mean) so as to allow the ready entrance of the small venous tube, which should be slipped into the vessel towards the heart, and retained there by pressure of the finger.* The patient who is to receive the blood being prepared in this manner, the operator should next prepare the person who is to supply it. Of the different arteries which may be fixed on as adapted to an operation of this sort, perhaps the radial, ulnar, or anterior tibial are the principal, and of these three I think the radial is decidedly to be preferred, for its conveniency in other particulars as well as on account of its easy access. The artery elected, a tourniquet should be put on the limb, between the intended opening and the heart, in readiness to be constricted, should emergency require, and then, to the extent of an inch or two, the artery should be laid bare with the scalpel, extensively enough to secure the aperture against the obstructions arising from a deficiency of room. This done the artery should be detached a little, say to the extent of half an inch, and a ligature should be put on the vessel below, close against the part where it remains connected with the cellular web and the vasa vasorum; and about an inch from this ligature, a pair of spring forceps should be applied, which, closing of themselves, may press the sides of the artery together, so as

* Should the small quantity of air lodging in this tubule be found to produce injurious effects, the tubule may be inserted first into the flexible tube, and then, after the whole tubular apparatus has been filled with blood, as hereafter explained, the tubule may be slid into the vein; but unless the operator become dextrous and prompt, the blood will become deteriorated, and even clotted, by lying in the inanimate apparatus.

to close it completely. The artery should then be laid open with a lancet to the extent of a line, (one-eighth of an inch) so as to allow the ready entrance of a small tube, and this opening should be made in the course of the vessel, as the artery, I find, when divided across, contracts more in its calibre, and, if the incision be a little too deep, in danger of breaking completely through. A small tubule, about the size of a crow-quill, in connexion with a flexible tube about as large as a goose-quill, should then be introduced into the artery with its extremity towards the heart, and should be secured there by means of a ligature; the ridge, or shoulder, near its orifice, will give it a bearing line, and prevent its slipping out. The operation being brought to this point, the small arterial forceps are opened by pressing the handles together, so as to give passage to the blood and expel the air from the tubes; after which the forceps are suffered again to close, and the tubercular apparatus being full of blood, the flexible tube is firmly connected with the tubule in the vein. With a moderate share of dexterity, the junction may be easily accomplished in a few seconds, and before the human blood, of slow coagulation, has time to become clotted; provided the venous tubule be made to unite with the flexible tube in the way of a plug. By pressing the tubule home into the flexible tube, and giving it at the same time a semi-rotatory movement, the junction may be made sure. The apparatus being thus prepared, the blood should be admitted to it by opening the spring forceps, and by means of the same instrument: the rapidity of the flow, as well as the moment of its cessation, may be regulated with great nicety. After the operation has been concluded, the wounds and the injured vessels must of course be managed on the general principles of surgery; and it may not be amiss to remark, that if, with a view of facilitating the operation, the artery of the person who emits the blood have been detached a little from its bed, when ligatures are afterwards applied, those ligatures ought to be applied close to that part where the vessel still remains in connexion with the cellular web, in order that the adhesion of the sides of the artery may not be interrupted, for want of connexion with the vasa vasorum.

The instruments required for this operation should, I think, be shut up in the same case with the impellor hereafter described. Those which I would recommend, are the following:—a tourniquet, a scalpel, a lancet, an eyed probe, a blunted needle and ligatures, a pair of spring forceps, venous tubules, a smaller and a larger, and two flexible tubes, each about six inches long, one connected with a smaller and one with a larger arterial tubule to meet the varying calibre of uniting, in the way of plug, with either of the venous tubules.

OF THE TRANSFUSION OF VENOUS BLOOD BY MEANS OF
THE IMPELLOR.

When, in consequence of the want of arterial blood, it becomes necessary to transfuse the venous, a different method of operating must be adopted; and, in the present state of our knowledge, I would recommend in such cases the employment of the impellor.

In operating with this instrument, a chair is to be procured, and by means of a gimlet an aperture is to be worked into the outside at the back of it, at a convenient elevation, and into this aperture the vice of the apparatus is to be very firmly screwed. By means of the solid stem which projects from its apex, the cup is to be fixed erect in the gripe of the vice, and the large outer cup, containing the impelling part of the instrument, is to be filled with tepid (96°) water, if this can be procured, so that the whole of this part of the apparatus, inclusive of the syringe, may be covered in completely by the water, in such manner that the entrance of *air* into the instrument by leakage, whether of the joints or of the syringe, may be effectually precluded. The apparatus being thus far prepared, the inner cup is to be put on, care being taken to fit the tube which projects below from the apex of this inner cup, to the corresponding tube which springs up from the cylinder with which the syringe is connected, and which lies in the bottom of the larger cup; because, if the exact apposition of one tube to the other be neglected, a difficulty may needlessly arise in putting the inner cup into

its place, in consequence of the two tubes interfering in an obstructive manner with each other. Half a pint, or a pint of water is then to be poured into the inner cup and pumped briskly through the instrument, so that the air may be expelled thoroughly, the water taking its place; and the extremity of the flexible tube which springs from the instrument is towards the end of the operation to be bent down into water contained in a tumbler, the pumping being continued, and this with a view of ascertaining, by the appearance of bubbles, whether there be any fissure at which air enters. The exact temperature of the instrument is not of importance, but the water should, in preference, be milk warm. The apparatus being thus prepared, the operator with his lancet may lay bare, as before, a vein on the fore-arm of the patient, to the extent of an inch at least, taking care to cut down completely through the cellular web, and then, by means of the same instrument, he may, as in the former operation, make a longitudinal incision at least a line in length, and large enough to allow of the ready entrance of the venous tubule to be introduced to the extent of two or three lines thoroughly, but with the utmost gentleness, with its extremity towards the heart. A ligature should not be used. The tubule should be retained in its place by the finger of the assistant who holds the arm. The orifice of the tubule should not have a cutting edge.

After the tubule has been introduced, the chair should be brought close to the edge of the bed; an ounce or two of water should be poured into the cup if void, the syringe should be thrown into action, so as to fill with water the flexible tube which may have drained itself empty, and then the venous tubule, previously inserted into the vein, should, by means of pressure combined with a slight semi-rotatory movement, be plugged pretty firmly into the flexible tube, in order to prevent the juncture from bursting open when the blood is impelled. After the apparatus has been fitted together in this manner, the person who is to supply the blood takes his seat on the chair; his arm is opened by the lancet as in ordinary venesection; any superfluous matter lying in the cup is removed by a piece of sponge; and the blood, instead of being received into a basin in the usual manner,

is directed into the cup of the transfusing instrument, and by the play of the syringe, impelled direct into the vein of the patient, without being suffered at any time to accumulate largely in the apex of the cup. As the object of the syringe is merely to give impulse, it ought not to be worked by long strokes, but by short and sharp movement, care being taken that the plug be every time pushed home, so as to bear down upon the nozzle plate and prevent any accumulation in the barrel of the instrument. If the syringe be worked in this manner, the blood will be a little more exposed when transmitted through the impellor, than it is when passing direct from artery to vein by means of a tube; since, in order that the impulse may be given, it is enough that the blood be admitted but a little way into the barrel of the syringe. Those who are acquainted with the principles of hydrostatics, must be aware that the entrance of a few minims would be amply sufficient for this purpose.

For supplying blood, men are preferable to women, as they bleed more freely and are less liable to faint. If blood can be procured from the arms of two persons at once, it would sometimes perhaps be desirable. Spirit sufficient to exhilarate and rouse the circulation, may be advantageously given to those who are to furnish the blood before the operation is begun. If the blood, flowing slowly from the arm, show a disposition to clot in the cup, or if the supply of blood fail, the person who furnishes should remove his arm, and a little water poured into the cup of the instrument may be pumped through the syringe so as to displace the blood; thus the apparatus being cleared of blood, will be secured against clot, and kept in a condition to proceed with the operation. If a large bubble of air be absorbed into the syringe, the operation should be suspended, the instrument should be separated from the venous tubule, and the blood and air should be cleared out of the apparatus by immediately pumping through it a few ounces of water, which should be at hand in a small jug furnished with a spout. It would be easy to contrive an instrument which would measure the quantity of the blood injected, but I think it better to avoid complexities of this kind. Of the quantity of blood thrown in, an opinion

may be formed from the feelings of the person who emits it, or by the size of the stream of blood which flows from the arm, and the continuance of the flow; or by putting water into the cup after the operation, and working the instrument with the same measured movement, and with the same degree of rapidity, and for the same time as during the operation. The measure of the water passed through the instrument in this manner, will give nearly the measure of the blood transfused. The time during which the operation is continued, should be ascertained by the watch.

It is of great importance, in using this instrument, that the outer cup be filled thoroughly, so as to cover in the head or upper end of the barrel of the syringe, to the depth of an inch, or an inch and a half at least; and it is this complete submersion of the impelling portion of the apparatus, with all its joints and vents, which is the only security against the entrance of air.

Till it be ascertained (and the affirmative is probable) that human blood may lie out of the vessels for one or two minutes, without material injury, we ought, in operating, to prevent the blood from accumulating in the cup of the instrument. Should it, however, be found hereafter, that the blood may be suffered to gather in the cup, without thereby becoming materially unfitted for its offices in the vessels, then, if this instrument is used at all, it may be proper, during the operation, to suffer an ounce or more of blood to accumulate, in order to prevent more certainly the cup from becoming empty, and thus to preclude the absorption of air.

The minute dexterity required in managing this instrument may be easily acquired by any person who will accustom himself to pump blood, or even water, through it; and those who are frequently performing the operation of venesection must have many opportunities of doing this. When the operation is completed, a pint of water ought to be immediately worked through the apparatus, in order to clear out the blood, and prevent it from lying in the tubes and becoming clotted there; and, as soon as occasion serves, the whole should be unscrewed and cleaned out more completely. If the wire-springs which raise the valves are injured, others may be

very easily made by giving a piece of wire a spiral form, like that of the spring which has been destroyed. If the leather valves are spoiled, others may be made of a piece of soft alum-leather. Both the wire and the leather should be stored in the case for this purpose. The owner of the impellor ought by all means to make himself master of its structure, and to acquire the little skill which may enable him to set it to rights for himself. Laundry of St. Thomas's Street, Southwark, now manufactures these instruments.

OF TRANSFUSION BY THE SYRINGE.

Should it be found hereafter, by numerous pointed, and therefore decisive experiments and observations, that human blood may lie out of the vessels in the cup for several seconds, without becoming thereby unfit for the vital purposes, there is yet another mode in which transfusion may be accomplished, by the syringe alone, I mean, and this method of operating, if feasible, may be adopted in preference to the preceding, on account of its greater simplicity. In this method of operating a good syringe is required, capable of containing two or three ounces of blood, and furnished with a pipe for the vein, (like that used in the former instrument), about two inches long, and made to fit by plugging, and a semi-rotatory movement, into the nozzle of the syringe.

The blood is to be drawn into a conical vessel, for example a tumbler, and while flowing into this vessel, held by an assistant, it is to be absorbed into the syringe. When charged, the syringe is to be held with its tubular nozzle upwards, and the piston is to be pushed slowly onward till the blood begins to issue, in order that the air, which from its greater specific levity, will rise to the upper part of the instrument, may be thoroughly expelled. The syringe, together with the tubule springing from it, now charged with blood only, is to be slid into the vein of the patient, properly laid open for the purpose, and without delay or hurry the blood is to be injected in an equable stream; the operation being repeated as often as the quantity of the blood to be injected may require:—the syringe being of a known capacity will measure the blood.

This, with some little improvement, was the method of

operating adopted in Brazier's case, p. 139. In this method also Mr. Goodridge operated on his dogs, as before described. The simplicity of the operation, and the portability of the instrument, are its great recommendation. A common syringe, if a good one, might be used in this manner if the emergency were pressing. When the syringe is observed for the first time, air may be previously expelled from the instrument by charging it with water. The vein must be laid thoroughly bare, as the cellular web, if not divided completely, will slip over the orifice in the vein, and obstruct the introduction of the instrument; and the opening must be made sufficiently large and free to allow of the ready entrance of the tube. Perhaps a probe might be passed under the vein with advantage.

MISCELLANEOUS REMARKS ON TRANSFUSION.

It may be objected to transfusion in every shape, that the tube may excite inflammation of the vein. In weighing this and similar objections, however, it should not be forgotten, that in the present state of our knowledge, it is proposed to perform the operation in the most desperate cases only, when it seems to be the sole remaining mean of saving the patient's life. There is much good sense in the familiar maxim of Celsus, and in the present case it is peculiarly applicable; for, surely, it is better to incur the uncertain risk of venous inflammation, than to leave the patient to his fate. Besides, the pipe should not be secured in the vein by ligature, but by the pressure of the finger merely, or the blood may be injected by an artery. In the latter case the risk of venous inflammation will be completely obviated, and in the former, probably, it is small.

It will, perhaps, be further objected to transfusion, that the operation is likely to be obstructed by the coagulation of the blood; but this objection is unfounded. In the preceding experiments the operation, though performed on the blood of the dog, was not impeded by concretion; yet the canine blood coagulates in one-sixth of the time which is necessary for the coagulation of human blood, as the following experiments

prove; and it is clear, therefore, that in transfusing human blood, coagulation can furnish no insuperable impediment.

31. I drew off, into a conical wine-glass, about three drachms of blood from the femoral artery of a dog; it began to coagulate in about ten seconds, and was completely solid in about eighty. In a second experiment which I made, the blood began to coagulate in about ten seconds, as before, and was completely solid in about sixty.

32. A patient being seized with an arterial epistaxis, I collected some of the blood of a bright florid tint. A full minute elapsed before even minute coagula made their appearance, and the blood did not become wholly solid till four or five.

33. A few drachms of venous blood were taken from the arm of a girl liable to attacks of epilepsy. It was full sixty seconds before even minute coagula began to make their appearance about the sides of the vessels, and six or seven minutes elapsed before a general coagulation of it took place.

34. I filled a syringe with blood taken from the same patient as the preceding. When retained there for one minute only, it was found, on expulsion, to be thoroughly fluid, and it was but slightly inspissated after remaining there for two minutes.

That air may enter in conjunction with the blood, may also be objected to this operation; and I have been induced, therefore, to make the following experiments and observations, with a view of ascertaining how far this observation is just.

35. Into the femoral vein of a dog (scarcely larger in the body than a full-sized cat) I threw about five drachms of atmospherical air in the direction of the heart, in quantities of about a drachm at a time; the whole operation occupying about five minutes. The quantity of the air was measured by means of the syringe. In consequence of this operation, dyspnæa was produced, together with irregular action of the heart; the dyspnæa, however, not coming on as soon as the air might be supposed to have entered the heart, but a minute or two afterwards.

During this operation the dog sighed deeply, and a slight dyspnæa was produced; the pulse too became unequal, and

the muscular system tremulous. As soon, however, as the animal was liberated, it leaped from the table, licked its wound, and seemed pleased with caresses. On the following day it was languid and restless, and the muscular tremour continued; the pulse intermitted occasionally, and the dog vomited once. In other respects it appeared tolerably well, took food greedily, and revived completely by the third day. This dog was very delicate; and, the small size of the animal considered, the quantity of the air injected was large; yet all the symptoms may be imputed, in part, at least, to the alarm which the operation excited.

36. About three drachms of air were blown from my lungs towards the heart, into the femoral vein of the dog, which had been made the subject of the preceding experiment; the greater part of the air being introduced at once. The respiration, circulation, and general health of the animal, seemed to be but little deranged by the experiment, even at the time; and the dog suffered so little subsequent inconvenience, that a day or two afterwards it was led into the country; nor did any urgent symptoms ultimately occur.

37. Mr. Coleby, well known at St. Thomas's Hospital, procured a large dog, laid bare the femoral vessels, introduced pipes, with their extremities towards the heart, and by means of the *impeller*, transmitted blood from artery to vein, for several minutes together without ceasing. The syringe used in this operation, of faulty construction, was not air-tight, and in consequence a considerable quantity of air was, by little and little worked into the vessels along with the blood. Before, too, the instrument was put into action, the air was not expelled by charging it with water, so that when the syringe began to play, all the air contained in the tubes, the cylinder, and the barrel of the syringe below the plug, was injected into the animal's veins.

In consequence of this operation, the dog suffered a great deal of distress, with frequent and irregular pulse for six or seven days afterwards, at the end of which it was killed and examined, when, as I am informed, a considerable quantity of air was found in the cavities of the heart, mixed up with the blood.

These facts considered, then, it seems probable that the entrance of a few drachms of air into the vessels, would be attended with considerable distress and even danger; but it must be recollected, that if the operation be carefully performed by a competent person, with a proper instrument, there can be no risk, lest air should enter the vessels in large quantities; and the *probability* is, that a bubble or two of air only would occasion little if any inconvenience. It is not objected to the capital operations in surgery, that an unskilful operator may lay open an artery, or that this or other accidents may happen in a moment of negligence even to the most dextrous.

In making these experiments on the dog I did not warm the instrument unless the weather was unusually cold; and though, in the present state of my information, I have recommended tepid water in operating on the human subject, I have a suspicion that heat tends to exhaust the irritability, and destroy what may be called the life of the blood.

Whether large quantities of water may or may not be safely injected into the human vessels, is, I think, uncertain; but there is reason to believe, at present, that small quantities will occasion no inconvenience, and the injection of small portions only is necessary in performing this operation. Both water, and wine and water, were injected into my dogs without fatal, or even serious consequences; but into this question I forbear to enter.

In pointing to the advantages which belong to transfusion by the syringe, in preference to transfusion by the tubule, I shall not enter into details. I refrain, therefore, from enlarging on the facility of the operation, or its uses in physiological research, and shall content myself with touching on those advantages which appear to be the most important. This operation may be performed with promptitude, for the human blood is always at hand; and the instrument may, in many cases, be procured in readiness, as the danger of uterine bleeding, at least, may frequently be foreseen. Promptitude of operating is an advantage of capital importance; for there is reason to *surmise*, from the preceding experiments (4, 5, 6, 7, 8,) that the apparent death of bleeding soon becomes irremediable. Another advantage arising out of this method of

operating, is the abundance in which the blood may be procured. A dog, below the middle size, and this variety, perhaps, is principally found about our houses, generally dies after it has given off from ten to twelve ounces of blood; but much larger quantities of human blood might be obtained on an emergency from the friends of the patient, or for hire.

But of all the advantages derived from transfusion by the syringe, by far the most important is, the opportunity it offers of throwing human blood into human veins. There seems reason for presuming, from facts already related, that the blood of one class of animals cannot be substituted in large quantities for that of another, with impunity; and hence it becomes of the utmost importance that we should be able to supply the human vessels with human blood,—an excellence, which transfusion by the syringe eminently secures.

SOME ACCOUNT OF SIX CASES, IN WHICH INJECTION INTO THE HUMAN VEINS WAS ATTEMPTED.

38. By two gentlemen in my neighbourhood I was called to a case in which a woman was dying, in consequence, as was supposed, of a loss of blood, which occurred during the birth of the placenta. As I entered the room, thirty or forty minutes after the messenger had been dispatched from the house to request my attendance, the patient ceased to respire; and *five* or *six* minutes afterwards, about sixteen ounces of blood, procured with ease by venesection, from two men (relatives of the patient) were thrown, by means of a syringe, into the bleeding vein of the arm. No signs of resuscitation were observed. The vein was laid bare with a lancet. The blood was infused without difficulty. The operation was performed with the syringe simply, in the mode recommended (p 536).

39. A young man, of somewhat muscular make, a patient in Guy's Hospital, lost a large quantity of blood, from the bursting of an artery, and appeared afterwards, for *two* or *three* hours together, to be evidently sinking from inanition. This patient I was requested to see; but in consequence of

my being from home, on professional business, time was lost, and I could not perform the operation till the man had ceased to respire for three or four minutes. Assisted, however, by a surgeon of talent and enterprise, Mr. Key, I injected sixteen ounces of blood, by means of the impellor, into the bleeding vein, exposed by the lancet; but, with the exception of one single sigh, no signs of returning life were perceptible. An esteemed and intelligent pupil of mine, Mr. Lord, furnished the blood; and there was no difficulty whatever in obtaining it by venesection as fast as the operation required.

In the first of these cases, it will be observed, the syringe was used; in the second, the impellor; and they prove, that in either mode, the operation is of easy performance: both, though indecisive, render it doubtful whether a man can be resuscitated by an injection into the veins, performed three or four minutes after the last respiration. Artificial breathing was not tried.

40. By a friend of mine, on the other side of the water, I was called to a patient, evidently sinking from a hæmorrhage, which had made its attack during the birth of the placenta, though two or three hours elapsed before death actually occurred. In this case, three or four ounces of blood were injected by the *syringe*, before the respiration ceased, without, of course, producing any obvious effect, the quantity being small; but as a full supply could not be obtained from the lady who offered to furnish the blood, the operation was necessarily abandoned. Women, it has been observed already (p. 534), are not so capable of supplying a sufficient quantity of blood as men are.

41. A lady, bled largely for puerperal fever, sank into that state of collapse, which, as men of observation know, is the precursor of certain dissolution. At the request of friends, who were anxious that a remedy, which promised little, should have a trial, about six ounces of blood, taken from her father by venesection, were infused into the bleeding vein, by means of the syringe. Mr. Williams, of St. Thomas's Street, laid the vein bare with a lancet, and the tubular nozzle of the syringe was repeatedly introduced into the vein without any difficulty. No decisive effect of any kind was produced by

the operation, and the lady died of the fever, without suffering any extraordinary symptoms.

42. A poor fellow in Guy's Hospital (his name was Brazier), between thirty and forty years of age, lay at the point of death, in consequence of the extenuation produced by obstinate vomiting, arising, as afterwards appeared, from schirrosity of the pylorus. At the request of Dr. Cholmley, and the expressed wish of the patient, the late Mr. Henry Cline and myself injected, by means of the syringe, twelve or thirteen ounces of blood into the vein usually laid open in venesection, when no ill symptoms, fairly referrible to the operation, were produced. During the first thirty hours afterwards, there was an increase of the strength, and the man appeared mending; but at the end of this period, he began again to sink into a state of collapse, similar to that which had preceded the operation, and died about fifty-six hours after the injection. Not a single bad symptom occurred when the blood was introduced. Could the operation have been repeated, it is not improbable that his life would have been prolonged.

43. A young man of short stature, but rather broad and muscular, came into Guy's Hospital, under an attack of hydrophobia, then verging towards its close. By the medical officers of the Institution, I was requested, in this case, to lend my assistance in performing the operation of Majendie, which consists in the abstraction of some twenty or thirty ounces of blood, and the injection of two or three half pints of tepid water into the veins, from one to several hours after the bleeding.

From this man I directed, that thirty ounces of blood should be drawn; but, I understand, from the very respectable surgeon who operated, that after the prescribed measure had been abstracted, a further quantity, of uncertain amount, was lost during the pause enjoined by Majendie, between the bleeding and the injection of the water, in consequence of the restlessness of the patient, and the resulting difficulty in securing the orifice of the vein.

Thirty or forty minutes after the bleeding, preparation was made for the injection of the water. A surgeon of the Hospital prepared the vein, and introduced the tubule; but it appeared at this time so evident that the poor fellow was dying,

that those whose office it was to decide, deemed it most prudent that the water should not be injected, and in this opinion I thoroughly concurred.

Several other successful instances of the operation of transfusion might be adduced, and were it not that the book has already extended beyond its intended limits, they would be fully detailed. They may, however, be consulted in the various medical periodicals of the day.

Whether it be possible to save a patient, when sinking from hæmorrhage, by injecting blood before respiration is stopped, these cases do not enable us to judge; but we may, I think, infer from them,

1st. That transfusion, especially that variety of it, in which the syringe alone is employed (p. 536), may be performed with facility.

2dly. And in the present state of our knowledge, that the operation is not attended with any obviously dangerous symptom, provided the blood be promptly transmitted, and the injection of air be precluded.

3dly. And till we have proof to the contrary, that when a patient has ceased to respire for a few minutes, much is not to be expected from injection of blood into the veins. What effects might be produced by the injection of venous blood into the common carotid of the right side, towards the coronary arteries, remains to be ascertained.

But, to conclude. The preceding paper contains all the facts, favourable and unfavourable, which are come to my knowledge, and which seem calculated to help the mind in judging, respecting the operation of transfusion. On perusing them, every one, who is in the habit of reflecting, will, of course, form an opinion for himself: having, however, thought a little on the subject, I may be permitted to state my own persuasion to be, that transfusion by the syringe is a very feasible and useful operation; and that, after undergoing the usual ordeal of neglect, opposition, and ridicule, it will, hereafter, be admitted into general practice. Whether mankind are to receive the first benefit of it, in this or any future age, from British surgery, or that of foreign countries, Time, the discoverer, of truth and falsehood must determine.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.



PLATE XIII.

Figs. 1, 2, 4, and 5, represent different views of Dr. Blundell's knife, employed in the extirpation of cancerous uteri. For a full description, we refer to the account of Mrs. Moulden's case, in the Appendix.

Fig. 3, is an engraving of Dr. Hopkins's forceps. The peculiarities of this instrument are three: they consist *in the introduction of the upper blade first*, from the lock being made on the reverse side. It is unnecessary to dwell on the advantage of this measure, as it is a well known practical fact, "that patients invariably recede, while the blade is passing into the vagina;" and hence, in using the common forceps so much difficulty is experienced, after the *first* or *under* blade is passed, in introducing the *second* or *upper* blade, the handle of which strikes against the bed and can scarcely be depressed so much as to allow the other extremity to be introduced.

The next point of difference, is *in the internal part* of the extremities of the blades, which, *by a slight degree of convexity*, are pre-

vented from injuring the cuticle or lacerating the integuments of the face or head, an accident not of unfrequent occurrence after the common forceps have been applied. The third, and in my opinion, *the most valuable peculiarity* of this instrument, consists in a *considerable curve* in each handle, adapted to receive the fore-finger of the operator, by which finger, the principal part, or the whole of the extracting force, may be applied. This is a matter of great importance to the safety of the child, enabling us to employ a high degree of extracting power, without a corresponding pressure of the blades on the foetal head.

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